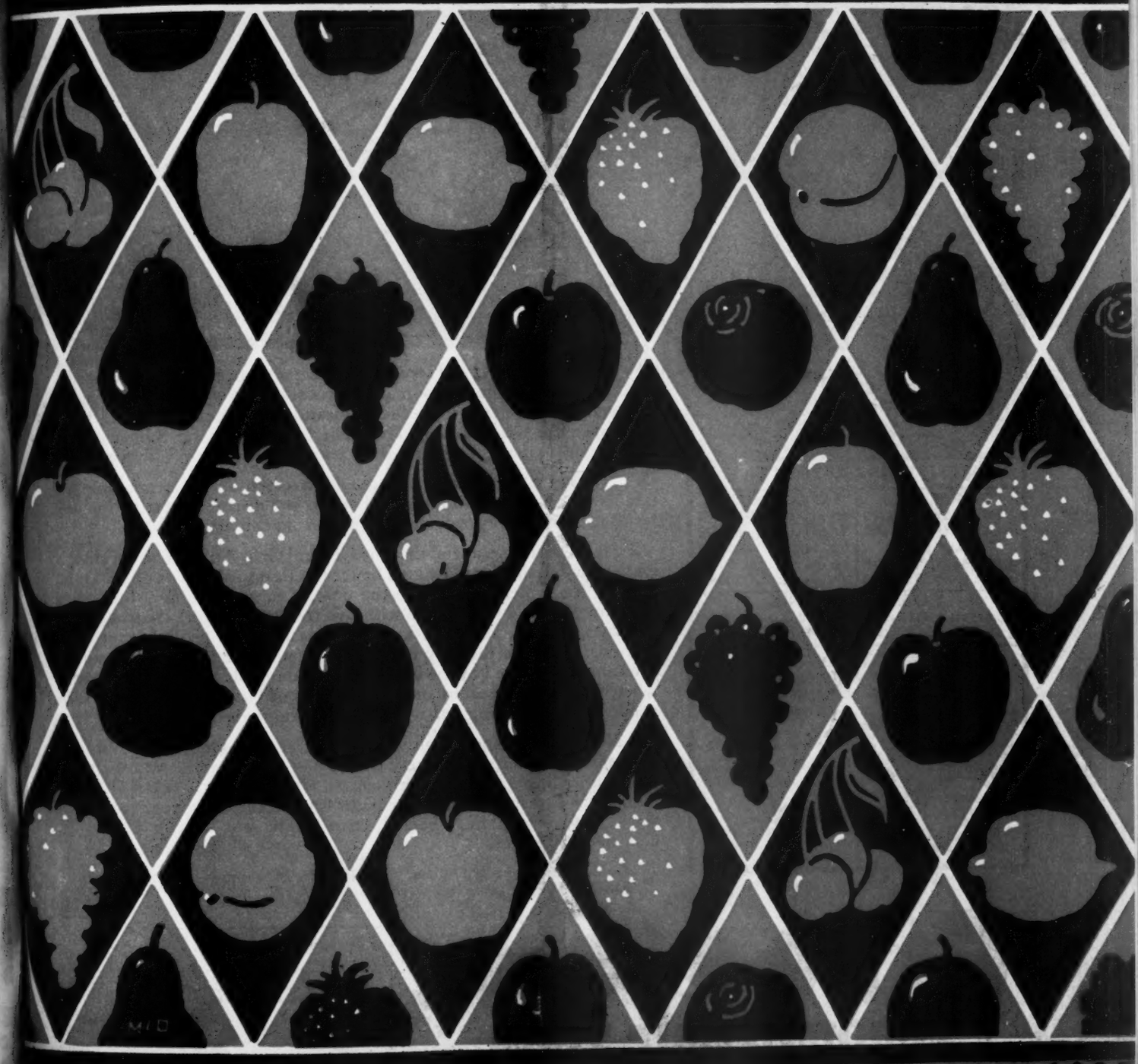
AMERICAN FRUIT GROWER



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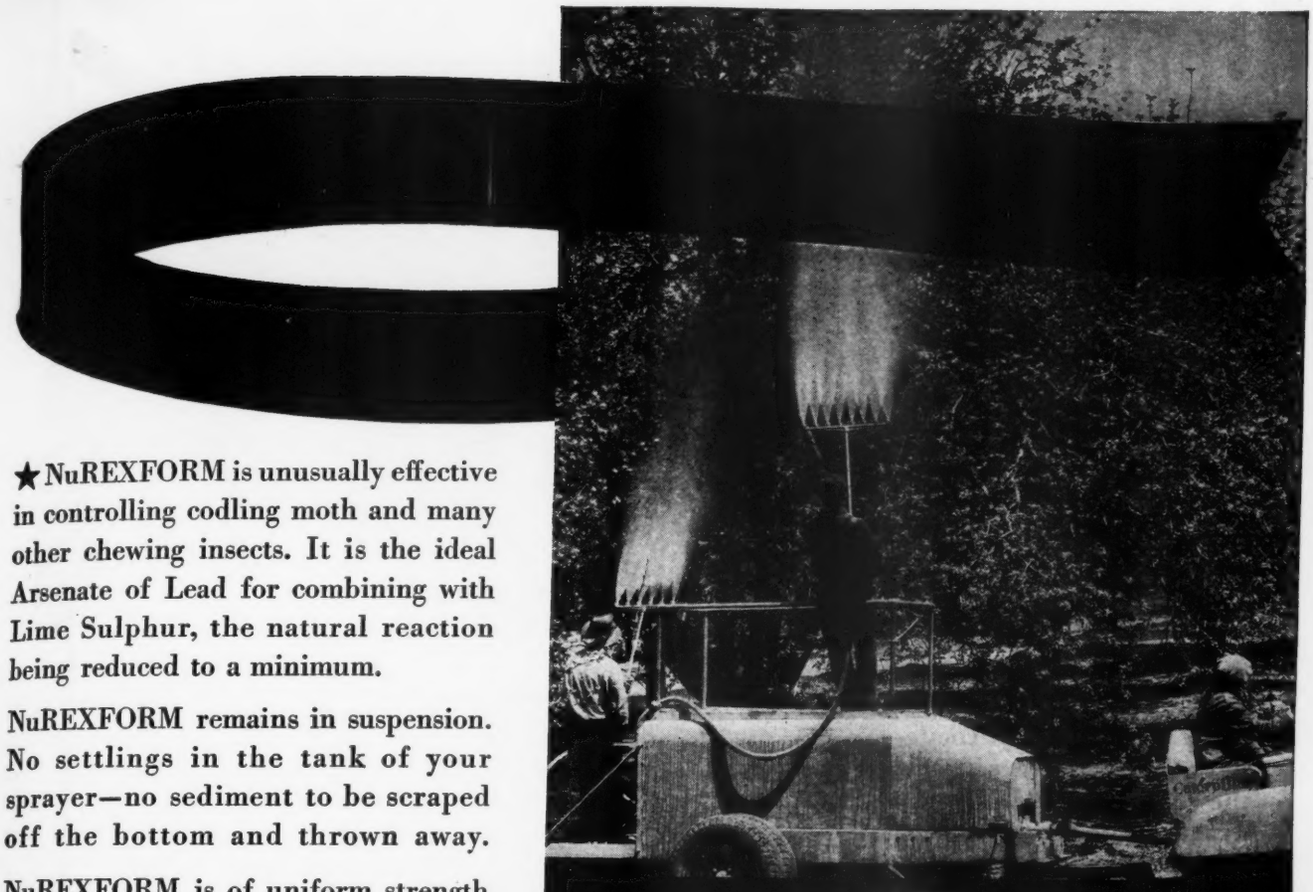

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AMERICAN FRUIT GROWER

TITLE REGISTERED IN U.S. PATENT OFFICE

MARCH 1937

VOL. 57 • THE NATIONAL FRUIT MAGAZINE • NO. 3

A BIRTHDAY MESSAGE FROM DEAN BAILEY

Written Expressly for American Fruit Grower Readers on the Occasion of His Becoming 79 Years Young

THE 79 years have seemed good to me. The world was full of wonders when I began to take note of it and I was keen to understand them all. Through all the years I have been exploring in the pageant of life, and now as the last days approach the wonders have increased and my hours are over-full. It is wonderful to have lived, and the prospects are better the farther one goes.

In the 79 years the ideas of men and women have changed fundamentally on every important endeavor. The subjects I studied so ardently in my youth are no longer the same as then. They are larger, deeper, more fascinating. They may change still more in the years to come. We now know that the world does not grow old to human kind, and are sure that greater satisfactions await those who come after us. Therefore, there is no reason for fears of futility, no apology for inertia, no excuse for cynicism.

Fruit growing is not at all the occupation I knew as a youngster, when I went about the region top-grafting the old apple trees to all the many varieties of apples the people wanted to satisfy their curiosity and to show at the fairs. Whether I like it as well or better is no part of the question. I cannot help it and therefore I accept it although I can no longer give advice. It is good to see the younger men and women so enthusiastic about it, and comforting to admire the better methods and devices and the more exact personal equipment that produce a superior product in important quantity. Every advancement in any occupation or profession and every new contact equips the person for a better grasp of the responsibility of living.

Earnest endeavors of young people seem better to me as the years go on. Enthusiasm and reasonable hope are still the mainsprings of satisfaction. Life comes to you.

You and your readers follow an important and interesting occupation, full of projects, troubles and rewards. I was brought up in it. I yet retain the ardor for it. I wish you the fullest success in all your activities.

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AMERICAN FRUIT GROWER

Published Monthly by

AMERICAN FRUIT GROWER PUBLISHING CO.
1370 Ontario St., Cleveland, O.

SUBSCRIPTION RATES

Domestic, Except Cleveland, 3 years $1.00. 1 yr. 50c. Cleveland and foreign (except Canada) $1.00 per year. Canada, 50c per year.

Entered as second-class matter at Post Office at Cleveland, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Illinois.

ROGER FISON, EASTERN MGR.,
Room 1212, 30 Rockefeller Plaza
Phone—Circle 7-1863

NATIONAL ADVERTISING REPRESENTATIVES: J. C. Billingslea Co., 123 W. Madison St., Chicago, Phone Central 0465; 415 Lexington Ave., New York City, Phone Murray Hill 2-3912.

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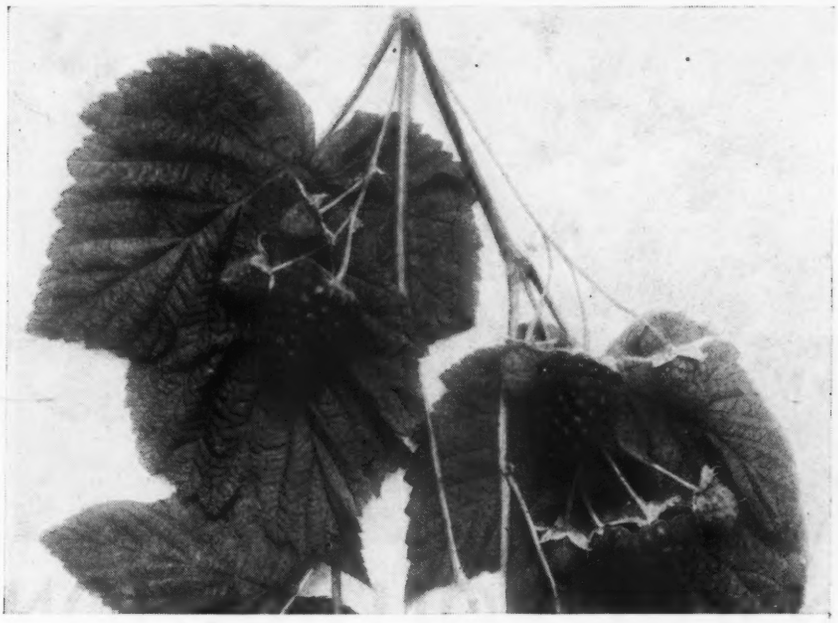
NEW *and* PROFITABLE



VARIETIES OF SMALL FRUITS

By GEORGE L. SLATE
New York Agricultural
Experiment Station

Taylor, one of the very recent new red varieties of raspberries.

THE question of what varieties to plant is always one of the most important to be decided by the fruit grower. The prospective planter must decide what varieties will fit into his scheme of things most profitably. Growers already established must decide whether the new sorts are of sufficient merit to replace their present varieties. Competition is keen especially in areas of large commercial production and the grower with better varieties than his neighbors has the advantage on the markets. Such an advantage is gained only by the grower who is sufficiently alert to discover the possibilities in new varieties.

The variety question is particularly important at the present time because of the rather large number of new varieties that have been developed and introduced by various experiment stations and the U.S.D.A. These are no chance seedlings that have been found in a fence row, but they are the culmination of many years of careful breeding. They are the best of thousands of seedlings raised from crosses planned to combine as many desirable characteristics as possible in one variety. In every case they have been selected by their originators as being distinctly superior to standard varieties in their test plats. Moreover, they have been observed and approved by visiting fruit breeders and fruit growers before being introduced. They merit the careful consideration of growers who would have better varieties.

New varieties sometimes bring new problems. The failure of a grower to appreciate the fact that a new variety must be handled differently than his old varieties may result in the rejection of a valuable new sort. In the following discussion of new varieties of small fruits the merits and faults of each will be set forth and, insofar as possible, cultural suggestions when different from standard practices will be made.

Strawberries have received much attention from the fruit breeders and as the result of their activity such splendid varieties as Dorsett, Fairfax, Catskill, and several others are available. Dorsett and Fairfax, produced by the U.S.D.A. by crossing Royal Sovereign, the best English variety, with Howard 17 (Premier), one of the best American varieties, have set new standards of quality among strawberries. Both are large, very attractive in appearance, with bright green hulls which do not fade. Dorsett is firm, while Fairfax is unusually firm. Fairfax gets very dark in color when dead ripe, which may be a drawback on the market unless customers are taught to associate the dark color with the exceptional quality. Both varieties are very healthy, increase rapidly, and in the latitude of Maryland produce heavy crops. In the northern tier of states the crops are not as heavy, and in Minnesota there is some question as to whether these varieties are sufficiently hardy.

The great vigor of Dorsett is responsible for the production of an unusually large number of runners. So freely are they produced that the fruiting row is literally clogged with plants, with the result that none of them secure enough moisture and plant food to produce a full crop of berries. An overcrowded fruiting row is undoubtedly responsible for the low yields that are reported with this variety. In an experiment with the Blakemore strawberry, conducted by the U.S.D.A. in North Carolina, it was found that by spacing the runner plants nine inches apart in a row 24 inches wide, and removing all runners formed after the row was filled at this spacing, the yield was more than doubled over that of the ordinary matted row 30 inches wide. Moreover, the berries from the spaced row were much larger and rotted less. The net profit from the nine-inch spaced row was $302 more per acre than from the matted row. More recently in tests with Dorsett and other varieties in

(Continued on page 22)

The Cabot blueberry, shown to the left in bearing, is one of the most popular of the early season blueberries. It requires cross-pollination for maximum fruiting.

INSECT POLLINATION OF CULTIVATED BLUEBERRIES

By J. S. Bailey and F. R. Shaw
Massachusetts Agricultural Experiment Station

THE commercial varieties of cultivated blueberries are self-fruitful under some conditions but fruit will not set without insect pollination. Under other conditions certain varieties may be entirely self-unfruitful and require cross-pollination. Whether or not all varieties are self-fruitful, insects are necessary to bring about high productivity.

Several kinds of insects have been reported as pollinators of blueberries. Among these the two-winged flies (Diptera) and the wasps and bees (Hymenoptera) are most frequently observed. The solitary or sweat bees (genera Halictus, Andrena, and Colletes) are very important in some sections. There are authentic reports that a good set of berries was obtained when most of the pollinating insects were solitary bees.

At Amherst, Mass., collections were made of all insects visiting blueberry bushes during different hours of the day from May 21 to May 26, 1936. The insects found most numerous were: honeybees 56, bumblebees 68 (two species), and solitary bees 72 (three species). The honeybee was the most numerous single species, although it was exceeded in numbers by the groups of bumblebees and the solitary bees.

The bumblebee has been considered the most valuable pollinator of blueberries because of its ability to work under unfavorable weather conditions and because its long stiff tongue enables it to reach to the base of blueberry flowers. The honeybee, on the other hand, has been considered of less value because of the belief that with its shorter tongue it could not reach to the base of the flowers of some varieties and would not visit them.

The value of honeybees as pollinators for blueberries was tested by placing a cage five feet by 10 feet by 10 feet over two bushes, one each of the varieties Harding and Pioneer. A similar cage was placed over one bush each of the varieties Pioneer and Grover. A branch of each bush was covered with cheesecloth to exclude bees. A nucleus hive was placed in each cage just before blossoming and left through the blossoming period. The caged bees, as usual, did not behave normally. However, enough visited the blossoms to make pollination possible, for the set of fruit on the caged bushes was as good as that on bushes exposed to the visits of all insects.

(Continued on page 26)

Wild blueberry plant in full bloom. This blueberry bush is 25 years of age. Such old bushes often bear good crops, but younger plants in open pastures are of more commercial value.

IMPROVING A BLUEBERRY LOT

By Charles H. Chesley

THE recent interest in blueberries as a fruit-growing proposition for the eastern and northern states has led many fruit growers to wonder if there is not some method by which their natural stands of this fruit can be improved.

There are two types of blueberry which are of commercial importance, the lowbush, *Vaccinium pennsylvanicum,* and the so-called highbush, *V. corymbosum.* The latter is the kind which is found in swamps and moist pastures from Maine throughout the Atlantic region and westward to the Mississippi Valley. The species is exceedingly variable and several varieties are recognized by botanists, in addition to the typical form. In old woodland swamps, bushes 15 feet in height and the size of a man's arm are not uncommon. Some of these old bushes frequently bear large crops, but the younger bushes found in the open pastures are of more commercial value.

Variations of the highbush blueberry have made possible the improvements now being acccomplished under cultivation, and in the not distant future it seems probable the domesticated blueberries will supplant the wild form. However, the cost of propagating the better varieties is still prohibitive and the wild pastures seem likely to return a profit for some time to come. Especially will this prove true if efforts are made to improve the blueberry lot.

One case has been observed where marked improvement has been made in the value of the crop harvested. Some years ago, this lot was over-

(Continued on page 23)

POLLINATION

WITH PARTICULAR REFERENCE TO THE

GRAPE

By Fred E. Gladwin

Viticulturist, New York State Agricultural Experiment Station

PART I

FOR MANY years it has been known that fruits of some varieties when planted at a considerable distance from other sorts fail to set in sufficient numbers to produce satisfactory yields. Possibly some commercial fruit growers of the early days were aware of the real reasons for the imperfect fertilization of the blossoms of certain varieties, but probably in most instances the variety was simply assigned to that group known as "shy bearers."

It is only within the past 10 or 15 years that the commercial fruit grower in general has come to consider the absolute necessity of planting only self-fruitful varieties in solid blocks or by themselves. If imperfectly self-pollinating sorts are to be grown profitably they must be mixed throughout the planted area with other sorts that are capable of fertilizing the blossoms of the imperfectly fertile. To determine which varieties will fertilize other sorts is largely a cut and try process.

Probably no individual in this country has done more to awaken the interest of scientific worker and fruit grower to the importance of good pollen in the production of our native fruits than S. A. Beach in his work with grapes at the New York State Agricultural Experiment Station, back in the nineties. Most of the conclusions reached as a result of his painstaking investigations have been substantiated by research workers who have duplicated his work at least in part. All of his work was done in the field and under natural conditions of climate and soil.

It was not until several years later that workers in pomological research made the study of fruit pollination and fertilization major problems in their researches. These studies have included work with most of the different kinds of fruits grown in the temperate climates of the United States. The problem is just as alive today as in earlier times, since the great numbers of new varieties being introduced each year render necessary definite information for the prospective planter as to whether they need cross-pollination that satisfactory crops may be harvested, whether they are self-fruitful, or whether they have proven good pollinizers for other imperfectly fertile or self-sterile sorts.

(Continued on page 24)

Hybrid male vine, Aramon X Rupestris Ganzin No. 1 (top), an outstanding pollen-producing variety. Note abundance of flower clusters.

Pollen from early-blossoming varieties having viable pollen may be dried, held for several days and used for cross pollinating self-sterile varieties. Center photograph shows Mr. Champlin (holding duster) and the author applying pollen of Aramon on blossoms of Eumelan, a self-sterile.

Eumelan, in blossom (left). Experiments indicate it is practical from a commercial standpoint to artificially cross-pollinate high-quality varieties.

BOYSENBERRY •

Probably no small fruit introduction has created so much general interest as the Boysenberry. This new member of the small fruit family resulted from a triple cross involving Loganberries, blackberries and raspberries. It was bred by Rudolph Boysen, superintendent of parks of Anaheim, Calif., and derives its name from the inventor.

Rapidly gaining in popularity throughout the country, the Boysenberry fruit runs approximately one inch in width and up to more than one and one-half inches in length. The new fruit resembles the Youngberry in color, but is less seedy. Its flavor is superior to that of any of the small fruits, say those who have sampled it. The fine flavor and firm flesh make it particularly adapted to wide use by consumers.

Reports of the hardiness of the Boysenberry are not numerous as yet, but a few growers carried plants through the severe 1935-1936 winter. George W. Knorr of Kentucky reports that his plants survived the low temperatures only to have the fruit crop cut short by drought. Low temperatures hit the planting of H. W. Schmitkons, near Lorain, Ohio, but his plants were covered with soil and did not suffer.

Many plantings of the Boysenberry were made in northern states during the spring of 1936 and it will be of interest to observe the fruiting of these plantings during the coming season.

BARON SOLEMACHER •

To have strawberries the first year from seed sounds like a fairy tale. Yet, a recently introduced novelty from Europe, known as the Baron Solemacher strawberry, does just that. This strawberry is of the Alpine type and produces no runners. When renewal is desired, it must be done by seeding. The plants do not ripen their berries all at the same time but set a few at a time all during the season. The flavor is excellent, similar to that found in the wild Alpine species of strawberries from which this particular type has been developed. Fruit of this new strawberry is about the size of everbearing varieties.

The Baron Solemacher strawberry is of great interest in Germany where it was developed. One grower alone has over 50,000 plants in production for 1937 sales.

NEW SMALL FRUITS

While recent small fruit introductions have been overshadowed by improvements of other fruits, plant breeders have perfected members of the small fruit family and some of the results of their work appear on this page. With increasing interest being devoted to small fruits as supplemental cash and orchard inter-crops, the need for better types has become important. Most of the small fruits must be adapted to the individual enterprise, but they are usually a welcome addition to the crops of any fruit grower. Requiring less attention than the tree fruits and maturing at a time when orchard work does not conflict, the small fruit planting offers another source of income for the grower.

NECTARBERRY •

The new Nectarberry originated as a chance seedling from some large Youngberries. It has been determined that from red raspberries and blackberries growing nearby, bees made a cross by which a berry which excels both parents in flavor, size and yield was produced. The berry is large, running a little larger than the Boysenberry, and is more pointed, being quite heart-shaped. An outstanding characteristic is its unique nectar flavor, which gives it its name. Some have reported that its flavor strongly resembles the flavorful Lloyd George red raspberry; others seem to recognize in it a flavor similar to the grape. Being sweeter and with more flavor than the Youngberry, it would seem to leave the field for the Youngberry chiefly to the earlier portion of the berry season, as the thorny Youngberry ripens about two weeks earlier than the Nectarberry and about 10 days ahead of the Boysenberry.

In color the Nectarberry is darker than the Youngberry and Boysenberry, being almost black when ripe. The drupelets are very large and loaded with juice. The seeds are small and there is no noticeable core.

The berry is large, the pickings last season running 25 to 28 berries to the eight-ounce basket. As a comparison, it takes about 30 to 35 Boysenberries, 40 to 50 Youngberries, or 110 blackberries to fill the same basket. In picking into the baskets, it was noticed that often three berries filled the space across the four and three-eighths-inch square basket.

The yield from the Nectarberry plants indicates a yield heavier than other varieties under California conditions. In rows adjoining Boysenberries and Youngberries and with the same care and growing conditions, the yield was more than double that of the Boysenberries, which have the reputation of being the heaviest yielders.

YOUNGBERRY •

Known in many sections as the Young dewberry, Youngberries have been favorably accepted by growers and consumers where they are grown. The name Young dewberry was given to this plant by George M. Darrow, small fruit specialist of the U.S.D.A. Hence it is more familiarly known by this name in the East.

The Youngberry was originated by B. M. Young of Morgan City, La. From the small seedling on the grounds of Mr. Young's home there has developed a wide industry in the production of this fruit. The Youngberry is the result of a cross between the Loganberry and the Texas dewberry. Vines of the Youngberry are prolific bearers and the fruit is large.

Culture of the Youngberry is similar to that of other berries. When grown under field conditions, the canes are allowed to lie on the ground and are trained to a trellis during the second season. This plant will not withstand severe low temperatures. It must be covered with a heavy soil layer during periods of extreme cold for protection. In southern sections where there is little danger of low temperatures, the plants require only the care given other berries. Growers producing this fruit say that added care is compensated for by the superior quality of the fruit.

In the North it is suggested that growers inquire of their state extension horticulturist as to the hardiness of the Youngberry in their sections before making extensive plantings. The same is true for the Boysenberry and the Nectarberry, descriptions of which appear on this page.

ELDERBERRY •

Although not generally thought of as a cultivated plant, the elderberry has always been a favorite for pies and home-made wine. The familiar growth sites of this berry are along fence rows and in fields. Like many of the wild small fruits, though, it responds well to cultivation.

Commercial value of this plant is limited, but with the introduction of superior cultivated varieties it is logical that at least a local trade could be built up for the crop. In addition to its fruit, the elderberry is an attractive ornamental plant and would be welcomed as an addition to any garden.

Adams is the best of the newer elderberry varieties. The bush of this variety is strong, vigorous and productive. Fruit clusters and berries are exceptionally large.

Engine and pump and a part of the three-fourths acre patch that produced 186 crates of strawberries for Scott Martin, Borden, Ind.

SUPPLEMENTAL IRRIGATION

INSURANCE FOR THE SMALL FRUIT GROWER

By R. C. SHIPMAN
Agricultural Extension Engineer
Purdue University

A BUILDING and its contents are destroyed by fire. The owner had it insured. He is partially repaid for the damage. An automobile is damaged in a wreck. Repairs will be taken care of by the insurance. A windstorm blows a house down. It is covered by insurance. It does not rain for two or three weeks. A strawberry crop is materially affected in that the fruiting season is shortened, the berries are small and of poor quality. What insurance have we that will cover a loss of this type? It cannot be bought through an insurance company. We can have insurance to a certain extent by supplementing natural rainfall. In other words, we can carry our insurance in the form of an irrigation system so that during periods of light rainfall water can be applied artificially to maintain abundant plant growth.

It is during the dry seasons and unusual seasons, such as that of the past year, that the benefits and profits of an irrigation system will show up as extremely profitable. For instance, the average yield per acre of strawberries as reported by a co-operative marketing organization located in one of the prominent berry areas was only 41 crates of No. 1 berries for the season of 1936.

An interesting thing happened during the picking and packing season. The inspectors noticed that the berries of one grower were of extra good quality. The berries were larger and of much better quality than other berries coming into the loading station.

(Continued on page 28)

Pumping from three drive points with a cylinder pump. A tractor furnishes the power.

A simple trouble-free pumping plant taking water from a shallow well.

WATCH FOR IT IN JUNE!

3rd ANNUAL DIRECTORY EDITION AMERICAN FRUIT GROWER

By DEAN HALLIDAY

HUNDREDS of letters are reaching AMERICAN FRUIT GROWER from readers wanting to know if there will be another Annual Directory Edition published in June.

The answer is—YES! The Third Annual Directory Edition is now being compiled. To eager readers—and interested advertisers, as well—we take pride in making the prediction that this year's Directory and Buyer's Guide will be the most complete, most comprehensive, and most useful edition ever published for the commercial fruit growing industry.

On page after page of the June Directory Edition growers will find the answers to their every-day questions about equipment, materials, supplies and accessories of all kinds for practical and profitable operation of their fruit farms. Conveniently indexed for ready reference, the Buyer's Guide Section of the June Directory Edition will list every requirement of the fruit farm from tractors to turn screws and from spray rigs to fruit wraps.

In addition to containing the eagerly awaited Buyer's Guide, this special June issue will also contain a complete presentation and analysis of the advantages of and the increasing trend towards MODERN COLD STORAGE on the fruit farm.

Activity in the past few years presents ample evidence of the progress being made in the construction of grower-owned cold storages. Since 1928 some 2,135 refrigerated storages have been erected on the fruit farms of America.

That this activity will continue, and in fact increase at a tremendous rate in the next three to five-year period, is verified by reports from growers and authorities in the fruit field and from statistical records which forecast a 40 percent increase in construction of all kinds during 1937.

The fruit grower is learning that with modern cold storage facilities on his own farm he can defer his picking until the fruit is of good size and finish. This obviously results in a greater percentage of high-quality fruit, the sale of which when the market is right gives opportunity for higher prices and greater profits.

Refrigerated storage facilities on the fruit farm enable the grower to store his fruit loose, permitting him to meet the salesman's or the broker's demands for certain sizes of fruit. The buyer thus receives the size fruit he wants, in the type of container his retail market prefers, and the consumer receives fresh, full packs of unmarred fruit.

AMERICAN FRUIT GROWER's investigation of this great advance in the harvesting and marketing of fruit crops—an advance made possible by the introduction of lower cost and efficient modern refrigerating units—leads to the sound prediction that within the next five years 10,000 new grower-owned cold storages will be erected on the fruit farms of this country.

The tremendous interest that is being focused upon the possibilities and advantages of cold storages brings to the mind and lips of every progressive grower the question, "What are the best and most practical types of cold storages for my size and kind of fruit farm?"

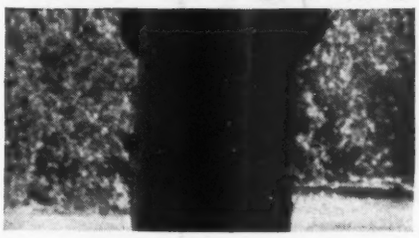
AMERICAN FRUIT GROWER will answer this question in the coming June Directory Edition with a complete editorial and pictorial presentation of facts and figures, plans and specifications of MODERN COLD STORAGES for the FRUIT FARM.

Watch for it in June!

featuring
the
Fruit Industry's
Most Comprehensive
BUYER'S GUIDE
and
facts and figures
about
MODERN COLD STORAGE
on the fruit farm

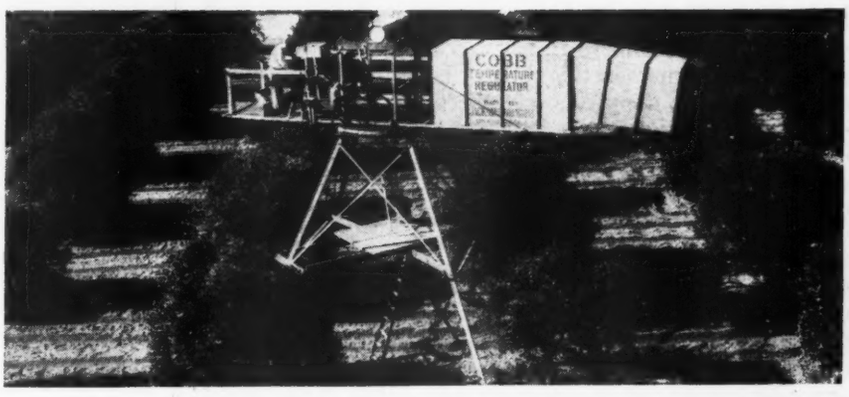
WEATHER MEN IN THE ORANGE GROVES

Left—Orchardist filling captive balloon with hydrogen for carrying thermometer above orange grove.



Center—This wind machine, consisting of gasoline engine and airplane propeller, blows warmer air through the chute, mixing it with the colder air below and thereby warming it.

Bottom—Temperature of air up to 200 feet above citrus grove is taken by this thermostatic thermometer.



By Andrew R. Boone

LOOKING to the future, there is a story within the story of widespread but not wholly successful efforts to save southern California's citrus crops in the face of recent severe cold. The story belongs to the U.S.D.A., the California Institute of Technology and two ranching organizations—Hardison Ranch Company at Santa Paula and the Foothills Orchard Company at San Fernando.

For years orchardists have made use of smudge pots when dew point and temperature reached the danger line. For a shorter span, wind machines—gasoline engines and airplane propellers standing on tall towers—have been employed in some sections. Both effectively warm the surface air; in the first instance by heating columns of air which mix; in the latter, by blowing warmer air down, thus effectively mixing it with the colder surface air and thereby warming it.

But when to smudge or blow, how many units to operate, and during what hours? Those were the questions, and they were vital to economical operation. The Hardison Ranch Company desired to learn the efficiency of wind machines in raising temperatures. The Foothills Orchard Company demanded specific data as to temperatures at various altitudes and means to combat cold cheaply.

Now we come back to the weather bureau, in the person of Floyd D. Young, Federal fruit frost service meteorologist stationed at Pomona. For several years Mr. Young has broadcast weather reports nightly, these based upon observations gathered at many points in the southern California citrus area over the North American continent, and from ships at sea. His reports provided orchardists with the necessary information to smudge or turn on the wind machines.

Next refinement may be credited to Caltech, particularly to Dr. Irving P. Krick, whose studies of air mass analysis gave to air lines more accurate methods for obtaining up-to-the-minute weather information, and to Louvan Wood of that institution. Dr. Krick worked out a method for sending captive balloons bearing registering thermometers above the groves; Wood developed the thermometer.

Now, had you been abroad in the vicinity of Santa Paula or San Fernando one recent cold night, you might have seen a shadowy figure fill a hydrogen balloon from a cylindrical tank, fix to it a parachute (to save the instrument in case of disaster aloft) and the thermometer, called a "telethermoscope", and send them aloft. Each 25 feet up to 200 feet, the bal-

(Continued on page 32)

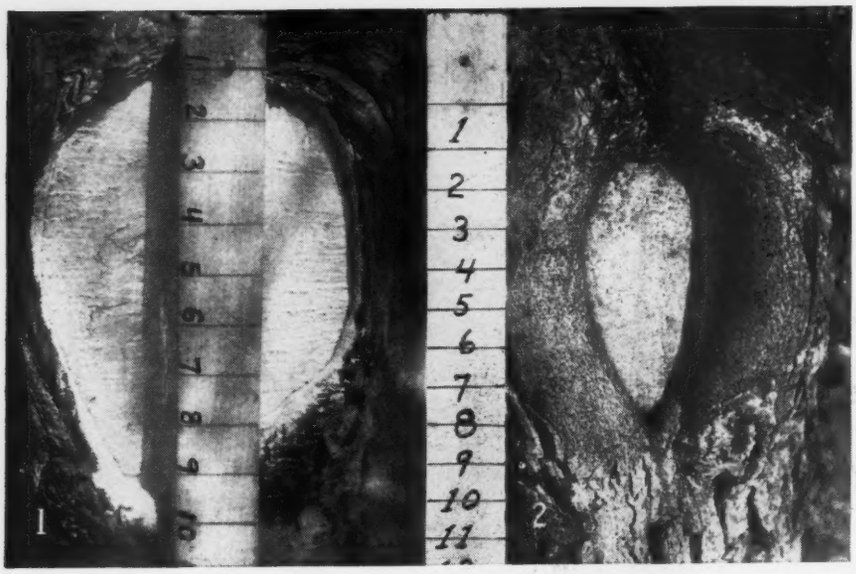


Plate 1—Pruning cut made on Stayman apple tree March, 1933, photographed one year later. See Plate 2, a photograph of the same cut made four years later.

Plate 2—Pruning cut that was eight by 12 inches when first made in March, 1933, on Stayman apple tree. This photograph was taken January, 1937, about four years after the cut was made. Note the rate of healing over by comparing with Plate 1. No decay developed although only one coat of paint was applied. For greater safety more frequent paintings should be made. Photographs by R. C. Moore, assistant horticulturist, Virginia Agricultural Experiment Station.

"WOOD POOR"

REMOVALS FROM APPLE TREES

By Dr. Fred W. HofMann

Research Horticulturist, Virginia Agricultural Experiment Station, Blacksburg, Virginia

FEDERAL statistics clearly show us that though the number of apple trees in orchard plantings in this country is on the decrease, the yields have been increased, with the grades immensely improved. What is rather disquieting are the admonitions emphasizing the possibilities for surplus crops even with further disposal of our plantings. Secretary W. S. Campfield of the Virginia State Horticultural Society urges emphatically as follows: "Ten per cent of the apple trees in the commercial sections of Virginia could be removed without lowering the returns, on the other hand the net returns would be increased. Some reduction of the trees is justified. Let's cut down those that are a burden rather than an asset. Give 'em the ax."

This advice, together with a movement for a gradual replacing of many of the undesirable varieties with the more desirable sorts, should have a salutary effect upon the apple industry. Along with this it would be well to encourage a movement for the elimination of all unprofitable apple wood.

The greater portion of our apple industry is struggling against odds by vainly trying to exploit unprofitable portions of apple trees. Where growers fail to have the courage to remove more wood than above that of a meagre thinning out, they are increasingly liable to become "Wood Poor." Many unprofitable expenditures made as a result of taking care of such wood will be the cause of a narrower range of profit and even disastrous loss.

Apple growers are justified, of course, in hesitating to do anything which would appear to mutilate their trees. All pruning is dangerous. This danger increases with the amount of wood removed. Cuts not properly made jeopardize the health of the tree. Quicker returns have been secured from the more sparsely pruned trees in their earlier years of production. The more heavily pruned trees were observed to be smaller in size and yield. Most naturally the predominating tendency would be to think almost entirely in terms of the larger tree with the larger yields.

Growers have been recommended to increase the production of the tree as a unit as the better means of securing a profit. This is a good recommendation providing the expenses can be held down to the right ratio. The trouble is that as the tree becomes larger the costs multiply at an accelerated rate. Yields may not increase at a corresponding rate so that as a consequence the margin of profit is liable to become increasingly narrow.

Some are inclined to believe that higher prices for apples would help, others seek to secure a greater turnover in sales so that volume would make up for the narrow margins of profits, while still others look for the solution in the reduction of expenses.

At times, certain inflationary tendencies will cause a rise in the price levels for apples, but there is always also the danger of price levels of other commodities necessary to produce the apples to take a corresponding rise, so that in the end a general higher price level has developed with no better profit margin for the production of the apples.

To resort to greater sale turnover with the hope that aggregate profit may be secured through larger volume even though the range of profit is narrower, adequate capital must be available. Some growers and organizations may have the necessary capital to pay for the expenses delegated to the different steps in production up through marketing. Does the average grower have this necessary capital? If not, he may best think of production in terms of larger margins of profit from the smaller sized unit which he is able to exploit to greater advantage.

It should be well to make a repeated reference to the accelerated rate of cost for managing trees as they increase in size. Anyone so minded could amuse himself in trying to derive a suitable mathematical equation in such costs by applying the principles of acceleration along with those of diminishing returns.

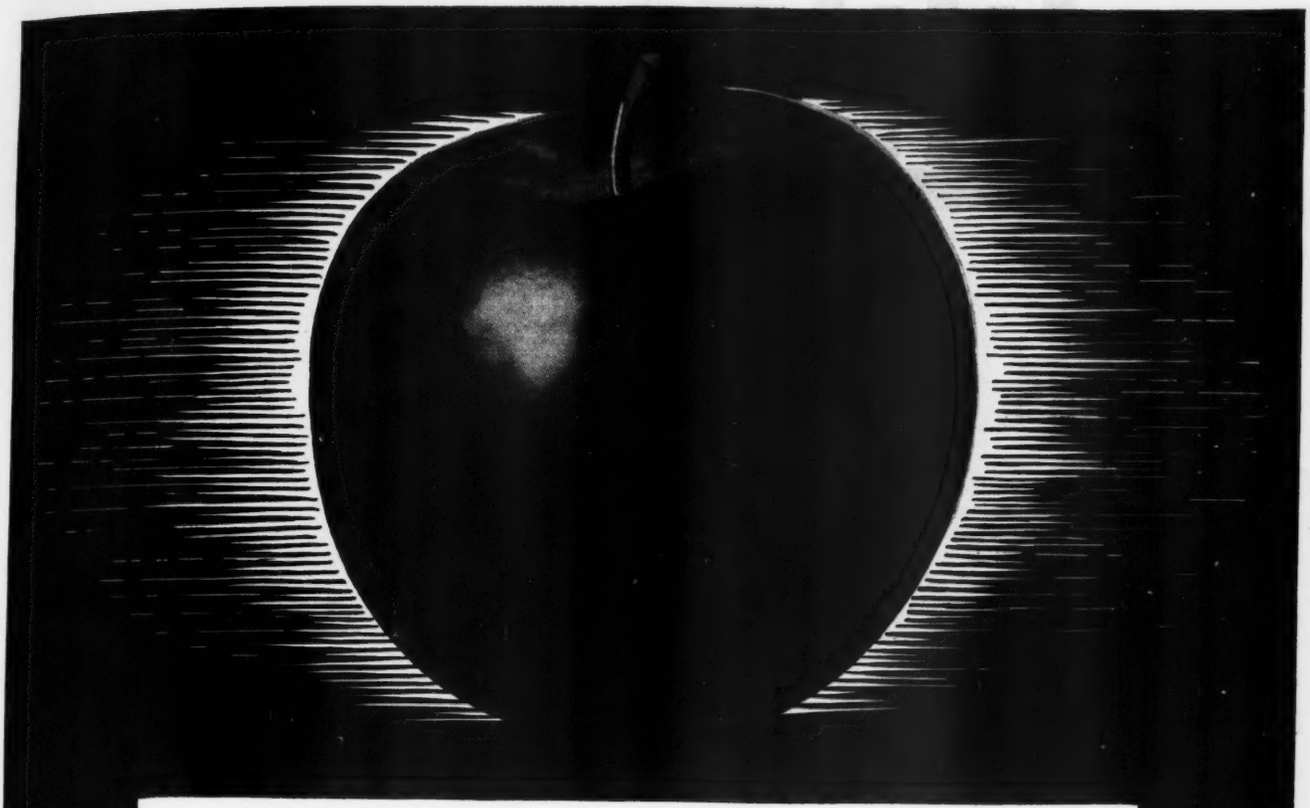
Perhaps it would be much more

(Continued on page 27)

A Plea for

MORE COURAGEOUS PRUNING IN APPLE TREES

The apple orchardist and the allied interests will find that on the average it will be far more wholesome to the apple industry if apple trees are reduced to a size that will eliminate the prevailing "Wood Poor" condition . . . .



"BLACK LEAF 40"

For BETTER CONTROL of Insects!

DAMAGED foliage, dwarfed and gnarled fruit are usually due to infestations of such insects as Green Aphis, Red Bug, Leaf Hopper, etc. Your season's profits depend on the spray control you provide. "Black Leaf 40", used as recommended in your state, kills these insects. It is doubly effective, for it kills both by contact and by fumes.

FORTIFIES CODLING MOTH SPRAYS: For better control with fewer sprayings add "Black Leaf 40" to your codling moth sprays. By adding "Black Leaf 40" to lead arsenate or "summer-oil" you add greatly to the effectiveness of these sprays. "Summer-oil" kills the eggs, lead arsenate, the larvae after they eat, and "Black Leaf 40" kills mature eggs and larvae; also adult moths.

"Black Leaf 40" is a highly concentrated poison of vegetable origin. It will not "burn" men, horses, foliage or crops. It is very economical and has a multitude of other uses. "Black Leaf 40" kills lice on poultry and livestock—protects flowers and vegetables from insects—keeps dogs away from shrubs and evergreens.

Sold by Good Insecticide Dealers Everywhere!

3732

TOBACCO BY-PRODUCTS AND CHEMICAL CORP. INCORPORATED

LOUISVILLE KENTUCKY

A PAGE CONDUCTED IN THE INTERESTS OF THE AMERICAN POMOLOGICAL SOCIETY

STABILIZING NAMES OF VARIETIES

ONE of the perplexing problems in horticulture is that of variety names. The practice of renaming varieties, either by accident or through deliberate intent, leads to confusion in every phase of fruit growing. During the past few years a number of cases of deliberate renaming of varieties has been attempted. In several instances vigorous action corrected the offense.

The Committee on Nomenclature of the A.P.S., headed by Dr. M. J. Dorsey, has made an extensive study of the problem, and in the report of the committee which was presented at the Roanoke meeting, specific mention was made relative to some of the more important phases of the problem.

This report is presented herewith because it seems pertinent and of general interest at this time. More new fruit varieties have been introduced during the past few years than in any like period during the past 25 to 50 years, and the temptation to rename some of these seems to increase in direct proportion to the number of new varieties introduced. It is hoped that by calling general attention to this problem that nurserymen and fruit growers will see the necessity of making every effort possible to keep variety names "as is," and thus avoid confusion insofar as possible.

Report on Nomenclature

Following is the report of the Committee on Nomenclature for the year ending December 1, 1936.

The membership of the committee has been increased from three to five by the addition of John T. Bregger of the U.S.D.A. and G. L. Slate of the Geneva (N.Y.) Experiment Station. Other members have remained the same.

The committee has had considerable correspondence in furthering its educational program with various horticultural interests during the past year. There is evidence of an increased awakening of interest in the stability of names in general, as shown by the fact that marked resistance has been put up on some instances where the rules have been violated. It is worthy to note, too, that the northeast horticulturists in their meeting at the Geneva Experiment Station this past fall went on record as supporting the efforts of the committee in the direction of stabilizing names.

While no new provisions have been made in revising the code to meet the situations which are now up for consideration, the committee wishes especially to acknowledge their indebtedness to Dr. H. P. Gould and Miss M. R. Newman of the U.S.D.A. for their suggestions on many of the controversial points. As chairman of the committee, I prepared a paper for the Iowa State Horticultural Society meeting on the general question of naming new fruits.

The committee has also given some attention to a plan of procedure in those cases where the code rules have been violated. This is an extremely complex problem when all the interests involved, as well as the legal aspects, are taken into consideration, and progress will be slow in adopting a plan, if it seems advisable to adopt one.

In this same direction, the chairman held a conference with President Miles Bryant of the American Nurserymen's Association on the general problem of nomenclature. As chairman of the committee, I have also gotten in touch with the Federal Trade Commission with reference to the legal aspects of changing or substituting variety names. William F. Dinnen, attorney in charge of the Chicago office, writes in part as follows on this point: "Once a name has been established for a fruit, selling it as something else of course constitutes misbranding. Based on matters the Commission has handled in the past, I believe it would take jurisdiction of a matter involving the misnaming of a fruit either in the sale of the trees or the fruit itself." This phase of the problem can very well be given further consideration in the future in order to acquaint the legal authorities of the commission with the point of view of horticulturists.

The chairman received a letter from Prof. Duruz under date of November 18 which in part reads as follows: "This past summer one grower was shipping peaches identified as Rochester and labeled Improved Early Crawford. He was arrested and tried in the county court, but the judge ruled against the state on the grounds that the grower had no intent to commit a crime, that the name used was passed on to him by a nurseryman, that there was no legal patent on the name, and finally that it was not proven beyond a doubt that one variety did not closely resemble the other. It seems that our horticultural tradition and names are at stake. If old names such as Elberta and Early Crawford can be misused, it seems that we should take up the matter of legally registering such names and requiring growers by law to adhere to the proper labeling of the same." The attitude of the court is particularly interesting to horticulturists and botanists alike, in view of the long tradition back of names being applied to carefully described and well-known plant entities.

It is of particular interest in this same connection to note that plant patents are granted to plant entities and not to a name. The position of the patent authorities being that if a name is given to a plant entity which has been patented, that fact serves much the same purpose as copywriting the name. For that reason, their chief emphasis is placed upon the claim made in the application.

In view of some of the duplications which have come up, it seems that the time is approaching when further consideration will have to be given to some system of registration. The committee has felt that this was a matter quite separate and distinct from the code and that since no member of the committee was in a position to adequately service such an enterprise, this whole problem should be given separate consideration. The problem is partly taken care of in some of the more specialized societies, particularly in Floriculture, and in part through the list of new fruits which C. P. Close has published from time to time. It seems that this whole problem is of interest to horticulturists, that it alone deserves special discussion as to the best method of procedure. In view of the urgency of some of these problems, it would seem especially advisable that a meeting of the committee be called in the near future, with, if possible, a full membership present in order to follow up some of these suggestions with adequate plans for action. Signed—John T. Bregger, M. B. Davis, G. L. Slate, Paul Stark, and M. J. Dorsey, Chairman.

New Fruits List

One hundred new fruits and nuts are listed in the report of the A.P.S. Committee on New Fruits and Nuts. The complete list appears in the Proceedings of the 1936 convention held at Roanoke, Virginia.

Of particular interest are seven new apples, a pear, 12 peaches, one nectarine and 13 apricots. The plum list contains four new varieties. There are five grapes, four raspberries, seven new strawberries and 17 blueberries; and other new fruits and nuts. Nearly 20 new blueberry varieties are listed and described.

These new fruit lists have been compiled annually by the committee, of which C. P. Close, U.S.D.A., Washington, D.C., is chairman. These are published in the Proceedings of the A.P.S. each year, and form an invaluable variety name citation record. Chairman Close, because of his experience with this work, is in an unusually good position to assist in the naming of new fruits. If names are submitted to him prior to the naming of a new variety, he is able to check the proposed name and determine whether it has been used previously.

The Beacon apple, a new introduction of the University of Minnesota Fruit Breeding Farm, is attracting an unusual amount of attention. It is a fine red apple which ripens along with Duchess, is of better quality, and has the further advantage of keeping much longer after being harvested. There is need of a better apple to take the place of Duchess, and Beacon may be that apple. It has gone through a preliminary test period which indicates that the tree is hardy and productive.

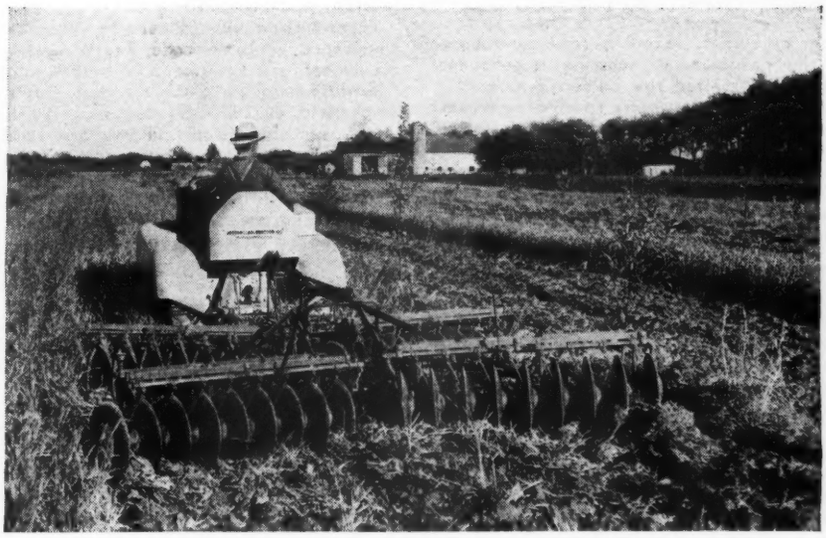
A fine new plum called Ember has also been introduced by the Minnesota station. We saw trees of Ember in full fruit last year, and it truly is a magnificent fruit. A number of nurseries are listing these varieties.

Renew your membership in the A.P.S. now. Otherwise we cannot send you the 275-page report of the Proceedings. You also get a year's subscription to AMERICAN FRUIT GROWER. Annual dues in the A.P.S. are $1.25 per year. Mail your remittance to H. L. Lantz, secretary, Ames, Iowa.

H. L. Lantz
SECRETARY

"No repairs IN A YEAR AND A HALF —AND POWER TO WORK WHERE WE PLEASE!"

SAY GARLAND BROTHERS, BERRIEN SPRINGS, MICHIGAN, OF THEIR "CATERPILLAR" TWENTY-TWO TRACTOR



WALTER and ALLEN GARLAND, operating over 100 acres of orchard near Berrien Springs, Michigan, give two important reasons for their satisfaction with the Twenty-Two Tractor:

1. "After a year and a half of use, our Twenty-Two has not needed any repairs, nor lost us any time from trouble.

2. "Our 'Caterpillar' pulls the sprayer over soft ground where we had never been able to use horses. Our other tractor couldn't do this work even with wide expansion rims. We just couldn't do our dormant spring spraying without the Twenty-Two."

Dependability and Traction—the same two main reasons why fruit growers buy more "Caterpillar" Tractors *than all other makes of track-type tractors put together!* Many "Caterpillar" Tractors are still going strong after doing 15,000 and more hours of heavy orchard work, apiece!

And most fruit growers appreciate the extra bonus of fuel economy which these rugged tractors assure. For example, Garland Brothers' Twenty-Two is disking rye cover crop here in young orchard—2½ acres per hour on only 2 gallons of fuel!

CATERPILLAR

REG. U.S. PAT. OFF.

TRACTOR CO., PEORIA, ILL.

WORLD'S LARGEST MANUFACTURER OF DIESEL ENGINES AND TRACK-TYPE TRACTORS

CATERPILLAR TRACTOR CO., *Dept. A-3*, Peoria, Illinois

Gentlemen: I operate_____acres of orchard.

My present power is_____

Please send information on:

☐ Orchard Model Twenty-Two ☐ Orchard Model Diesel RD4

☐ Orchard Model Thirty ☐ Name of local dealer

*Name*_____*R. F. D.*_____

*Town*_____*County*_____*State*_____

STATE NEWS

FROM NEAR AND FAR

RHODE ISLAND—Common method of growing strawberries according to the matted row system may not be the most profitable. Experiments have demonstrated that only large, vigorous runner plants will produce large

crops of berries. There is some question as to the possibility of securing large runner plants in a matted row on fertile soils.

An extensive strawberry spacing experiment was started at Kingston last spring, with 70 plots of both Howard 17 (Premier and Dorsett treated in different ways. Differences in leaf number per plant and leaf area per plant are given below to show the results obtained.

Average 4 Matted Row Treatments

Average number of leaves per plant:

Premier	5.20
Dorsett	4.95

Average leaf area per plant in square inches:

Premier	26.67
Dorsett	28.21

Average 10 Spaced Row Treatments

Average number of leaves per plant:

Premier	12.30
Dorsett	12.29

Average leaf area per plant, in square inches:

Premier	103.59
Dorsett	141.80

Not only has spacing runner plants from six to 10 inches apart greatly increased number of leaves per plant, but it has also increased size of the individual leaf. While more information is needed before we can say that strawberry runners should be spaced six, eight, 10 inches or farther apart, it seems wise to space to at least six inches.

Growers are invited to visit the plots at Kingston in June to see the differences in fruit harvested.—E. P. CHRISTOPHER, Sec'y. Kingston.

MINNESOTA—Most profitable of the five varieties of plum-cherry hybrids—Sapa, Oka, St. Anthony, Opata, and Nicollet—planted on a two-acre tract in 1932, were Oka and Sapa, the gathering at University Farm during Farm and Home Week were told by L. B. Bassett of the St. Paul Bassetts.

Mr. Bassett's planting yielded eight tons of fruit in 1935 and produced about 10 tons in 1936 but extreme heat and drought ruined most of the 1936 crop just before it was ready to pick. Sapa and Oka brought eight cents a pound on the trees; the other varieties sold at six cents a pound.

Maturity, dormancy, and the rest period govern resistance to cold, according to Dr. W. G. Brierley of University Farm. The rest period may be broken by low temperatures in early winter and growth may commence at any time thereafter at the onset of warm weather. He explained that no plant is hardy to cold in summer but acquires hardiness as it matures.

That there may be a wide range of hardiness in the same variety according to the growth condition of the tree was illustrated, stated Dr. Ernest Angelo of University Farm, by severe winter injury to the hardy Duchess variety last year in some places where the tree had produced a heavy crop the preceding fall.

Among apples at Minnesota Fruit Breeding Farm (St. Paul) that showed least winter injury last year were Haralson, Minn. No. 1007, Wealthy, Beacon, and Cortland. Less hardiness was shown by Northwestern and McIntosh. Jonathan and Golden Delicious were severely injured.

Plums that showed little or no injury were Underwood, Tonka, Superior, Red Wing, Monitor, Ember, and Radisson.

Extreme hardiness of Minn. No. 3 pear was emphasized by Dr. A. N. Wilcox. This is a small pear of delicious canning and dessert quality, although it is much smaller than less-hardy named varieties as Parker, Patten, and Douglas.

Harnessing the cold winds for profit was suggested by Central Experiment Station's T. S. Weir (Grand Rapids, Minn.) who observed that by planting strawberries on the southern or southeasterly side of the raspberry planting the latter will act as a snow catch to provide good cover for the strawberries.—J. D. WINTER, Sec'y. St. Paul.

NEBRASKA—Mother Nature having proved herself a doddering old dame, farm machinery companies are developing a soil chisel and basin lister for conserving moisture in Nebraska subsoil.

Importance of these developments is made apparent by studies of Dr. C. C. Wiggans of Department of Horticulture, Lincoln, which indicate that in addition to the natural rainfall of about 23 inches, trees took out of the subsoil at least 12 additional inches of stored moisture in 1936 which had to come from below the 20-foot level.

"If dry weather continues and there is a similar drain on subsoil moisture, our trees will have exhausted the available moisture down to 35 feet within three years," Dr. Wiggans told the hort society annual gathering in Lincoln.

In the meantime, however, many trees will have died.

The new moisture-conserving tools are quite effective in holding rainfall and making it penetrate rapidly into the subsoil, according to Ivan Wood, extension engineer of the agricultural college at Lincoln, but they must be used on the contours, otherwise they are likely to aggravate soil washing.

Round table discussion on apple grades resulted in decision to adopt present U.S. grades in toto rather than to set up Nebraska grades. This would shorten the proposed bill and make for uniformity. The bill is being prepared by a committee from the hort society in co-operation with W. B. Banning, apple grower and present State secretary of agriculture.

Questionable practices such as overfacing, misbranding of grades, etc., employed by unscrupulous dealers and in some cases by growers, would be greatly reduced it is felt.—E. H. HOPPERT, Sec'y. Lincoln.

WEST VIRGINIA—Good financial profit for apple growers of the State during the next decade was predicted by Henry W. Miller, Jr., president of the hort society, at the 44th annual convention at Martinsburg.

Bearing acreage of apples has been declining heavily of late years. Better production methods are still not equal to producing average crops of 1920-30. Although heavy plantings may be expected, these will not influence the crop for at least 10 years.

Frank H. Wissler, Mt. Jackson, Va., president of Virginia Hort Society, told the convention his 10 years of experience with irrigation had proved to him that:

Irrigation produces 300 to 400 per cent more fruit; produces larger sets per tree of apples that grow larger and have better color and better keeping qualities; and makes for steady year-by-year bearing.

Use of the five-pound mesh bag for packing Appalachian Area apples was urged by Matilda Dennis, New York fruit broker, as it makes for selling larger quantities at a time. Placing apples up on display shelves with other fruits and vegetables, allowing for complete inspection by the housewife, was also urged by Miss Dennis. (Retailers will have to be prodded.)

First season's Appalachian Apples, Inc., advertising was reported on by C. R. Miller, manager of the four-state organization established in 1936. AA has placed 1,048,000 pieces of apple advertising in 15,240 grocery stores of Central East and South; has taken part in a number of food shows and kindred events; has distributed 60,000 apple recipe books to approved quarters; has a machine built which when filled with financial "fuel" is competent to acquaint consumers, grocers and physicians of the East and South with Appalachian Area apples.

Less than half a million dollars is being expended in the U.S. this season by apple advertising agencies, against more than $2,000,000 for citrus by California and Florida. But the apple promotion work, though limited, has shown definite results. Movement into consumption of apples this year has been faster and at higher prices, a part of which at least is due to advertising, grocer service, educational and publicity work of the apple advertising units, said Miller.

Edward L. Frost, Richmond, Va., retiring president of National League of Commission Merchants, said the sooner both growers and receivers realized their interests are one, and both unite to get standard, good quality fruit to the consumer, the better off apples will be. —CARROLL R. MILLER, Sec'y. Martinsburg.

NORTH DAKOTA—A discovery of the Bureau of Entomology, U.S.D.A., which may have

much to do with quarantine regulations against foreign fruits in the future is that if a fruit is cooled so that its internal temperature reaches 34 degrees F and held at or below that temperature for 20 days all stages of the Mediterranean fruit fly will be destroyed.

(Continued on page 20)

3 ESSENTIALS OF SPRAYING

TIME-

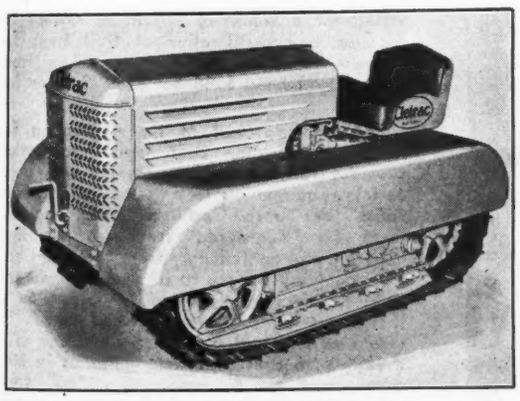
MANNER-

MATERIAL

YOU can select good spray materials—you can use them properly—but *time waits for no man.* And spraying must be done on time.

To the owner of Cletrac, time means *now* because Cletrac can go into the orchard any day or night—regardless of soil conditions—and pull the spray rig as well as operate the sprayer—with plenty of power in reserve.

Study the new streamlined orchard model Cletrac. You will find that every detail for meeting the requirements of orchard work has been included. Cletrac is a tractor that does all the routine orchard work and the occasional jobs, too. Load it to capacity with disc, harrow or plow and watch its smooth, hour-after-hour operation. Put it at odd jobs of hauling, digging ditches or operating a pump. It does them all efficiently, because Cletrac is an all-year, all-job tractor you cannot afford to do without.



Cletrac Streamlined orchard models may be equipped with fenders to prevent damage to low-hanging fruit and branches.

THE CLEVELAND TRACTOR CO. Cleveland, Ohio

22 - 94 horsepower—Cletracs are available in sizes from 22—94 horsepower. Model E Cletracs use 70 octane gasoline or may be equipped to use kerosene. Larger models offer the choice of gasoline or Diesel power.

Cletrac
Crawler Tractors
Built To Endure

THE CLEVELAND TRACTOR CO.
19310 Euclid Ave., Cleveland, Ohio

Send me your fully illustrated and detailed broadside covering all uses of your Streamlined orchard model.

Name _____

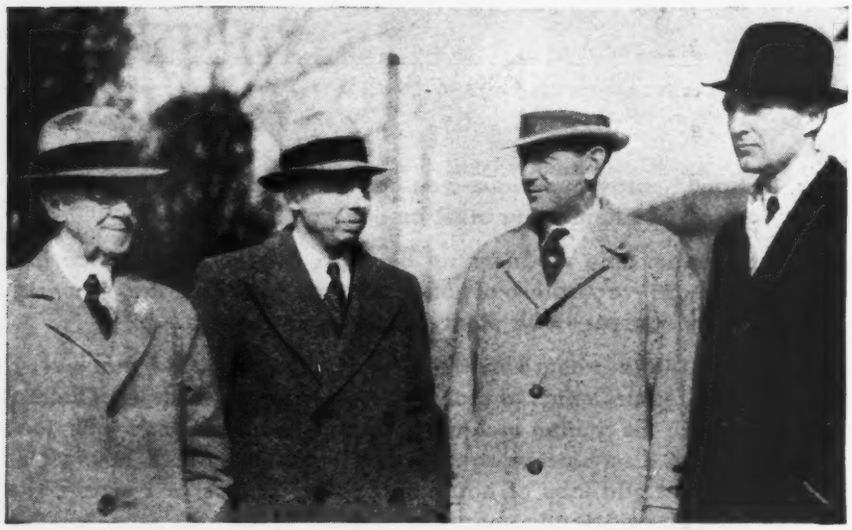
Address _____

Town _____ State _____

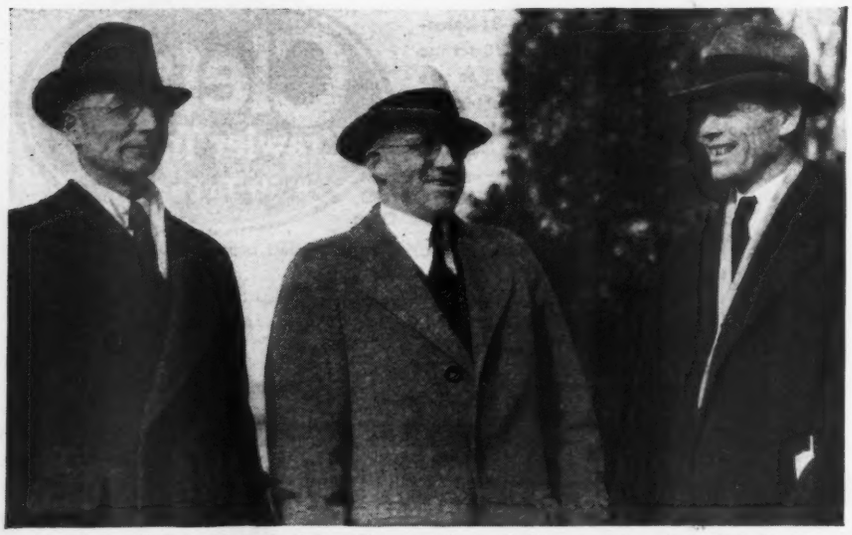
CLETRACS COST MORE TO BUILD . . . BUT LESS TO OWN!

Camera!

Reading from left to right, Junior and Senior I. T. Quick, fruit growers at Peninsula, Ohio, "talking things over" with Herbert Neal of the Neal Fruit Farm, West Richfield, Ohio, and I. T. Cushing, manager of the Neal Farm, while in attendance at the 70th annual convention of the Ohio State Horticultural Society at Columbus.



Three Ohio Experiment Station specialists and Fruit Grower J. B. Lane of Jamestown, "shot" while out for a stroll between sessions of the meeting. Left to right: F. H. Ballou, AMERICAN FRUIT GROWER author and associate horticulturist; I. P. Lewis, another AFG author, fruit grower and associate in horticulture; Mr. Lane, and Dr. Leon Havis, small fruit specialist.



H. N. Scarff, left, New Carlisle, 1936 president of Ohio society, chats with R. H. Varion, center, East Canton, and W. Dale Hilbish of Painesville.

STATE NEWS

(Continued from page 18)

A report on fruits in the fall of 1936 is made by Mr. Wodarz of Wyndmere, N.D.: "Dolgo, Amur, Sugar Crab, Linda Sweet, and Russian White (apples) fruited in 1935 and came through the summer of 1936 perfectly. Adno bore a heavy crop and was only slightly damaged. Virginia crab came through fine.

"Ones that fruited heavy and were particularly hurt were Ivan, Oka, Okabena, Wealthy, Duchess, and Pickwick. Those damaged which produced no crop in 1935 were Charlamoff and McIntosh.

"Younger trees which stood the weather well were Beacon, Minnesota 1007, Melba, Milton, Caramel, Minnesota 790, Sweet Russet, Whitney, Maga and Bismer. Cortland seems much more apt to succeed than McIntosh. Melba is a graft fruited the second year. Adno apple is very nice. Erickson might be placed on the list with the hardiest apples with the suggestion that people raise it.

"Of the plums, Underwood has done very well. Of the Beaver and Dorsett strawberries planted in 1935 Beavers passed out this summer, but the Dorsetts are still there."

John E. Bosher in English *Gardening Illustrated* reports success in grafting Melba apple on a species of cotoneaster. That might be a good thing to try for someone particularly interested in propagation using our *Cotoneaster acutifolia* for the stock.—A. F. YEAGER, Sec'y, Fargo.

OHIO—Despite flood conditions in the southern part of the State during Farmer's Week at Ohio State University, Columbus, the 70th annual meet of the State hort society was well attended.

Question Box periods, led by W. H. Matthews, prominent Salem, Ohio, grower, held featured place on the program. Mimeographed sheets containing questions previously sent Secretary Frank Beach were distributed. Answers were forthcoming from specialists and growers.

Fruit grower I. P. Lewis of New Waterford, associate Horticulturist of the Agricultural Experiment Station, was elected 1937 president of the society. Harry Lutz, manager of Sandhill Orchards, Carroll, was named vice-president. C. W. Ellenwod, Department of Horticulture, Agricultural Experiment Station, was unanimously re-elected treasurer. Mr. Beach extension horticulturist, continues as secretary.

UTAH—Fruitmen have decided that they would far rather feed nurserymen on the public debt than listen to their patter regarding new names for old varieties. This in general is what hapened when it was decided at the annual convention of the hort society in Salt Lake City that a nursery law was needed providing for a voluntary system of nursery inspection and certification of fruit trees for trueness to name. Penalty for selling trees untrue to name: $100 to $300 fine or jail sentence.

The bill approved at the convention for introduction in the Utah legislature further provides for licensing nurserymen who meet certain requirements to produce "Utah Registered" or "Utah Certified" trees. Requirements for "Registered" trees are that they must be propagated only from trees certified by a qualified agency to be true-to-name and of desirable type, followed by inspection in the nursery for trueness to name by means of leaf and bark characters, and rules designed to prevent mixing varieties in handling must be followed. "Certified" trees would have labels attached to the trees in the nursery at time of inspection.

Intelligent nurserymen will take heed, others will take sentences.

Two other bills approved for introduction in the legislature: An amendment to the wormy fruit law permitting the use of cull fruit for by-products, under the eagle eye of an authorized inspector. An amendment to the sales tax law exempting growers and far-

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EXTRA **Orchard Brand News** EXTRA

Reg. U. S. Pat. Off.

VOL. 1, NO. 1 MARCH 1937 EASTERN EDITION

OIL EMULSION "83" ELIMINATES RIVALS ON QUICK-BREAKING PERFORMANCE

ORCHARD BRAND LIME SULPHUR SOLUTION COMBINES HIGH POWER, FREEDOM FROM SEDIMENT

Field tests prove that, unlike the home-cooked material familiar to old-time fruit growers, and ordinary commercial lime sulphur solutions, the modern Orchard Brand product is always of one standard concentration . . . always uniformly high in potency, uniformly free from nozzle-clogging sediment.

Rigid control in manufacture assures a calcium polysulphide content of 29%, and a definite preponderance of available sulphur in the efficient tetrasulphide and pentasulphide forms.

Complete filtration in the most modern type of filter press, the final process in manufacture, makes Orchard Brand Lime Sulphur Solution clean and free from sediment. Fruit growers are unanimous in their appreciation of the savings in time, labor-costs . . . and frayed tempers . . . assured by this unique feature. Lime sulphur clogging of spray nozzles, with its attendant annoyance, is definitely a thing of the past.

San José Scale
The grower's principal scale enemy
(greatly enlarged)

Points Way To Economy For Dormant Spray

ORCHARD BRAND Oil Emulsion "83" is a *quick-breaking* emulsion. When applied (after dilution with water) the oil quickly separates from the emulsifier and deposits itself *evenly* on the twigs and branches. Its run-off is almost entirely water.

Recent experiment station work demonstrating that high calibre quick-breaking emulsions deposit almost twice as much oil as "tight" miscible oils, explains the remarkable control records compiled by "83" on job after job.

Oil Emulsion "83" is productive of substantial economies not only in crop saving, but in material, time and labor as well.

Flexibility is an important feature of this Orchard Brand product. Used alone, it provides effective control of red mite, leaf roller and scale. And it is highly efficient, in combination with tar oils or cresylic acid, against rosy aphis . . . and with lime sulphur solution or bordeaux mixture against peach leaf curl.

MAXIMUM EFFICIENCY AND SAFETY AT MINIMUM PER-ACRE CONTROL COST

ORCHARD BRAND Oil Emulsion "83" contains 83% by volume of mineral oil in complete emulsion, and has spreading and covering qualities that enable it to kill both running and hibernating scale.

ITS LARGER OIL PARTICLES, as compared with certain flowable products, give it superior breaking characteristics—better deposition and less run-off. It is highly economical.

ITS OIL CONTENT is a petroleum distillate of a proper boiling range—without heavies to gum the bark, or light oils which might penetrate and injure the cambium.

THE ORCHARD BRAND PRODUCT spreads an efficient film on the tree surface, yet is sufficiently volatile to dissipate itself before it can cause injury.

A card or letter will bring you, *without obligation*, concrete suggestions on the efficient solution of any particular control problems you may have.

Orchard Brand customers are invited to take advantage of the personal service offered by the staff of technical experts we maintain in the field. Just phone or write your nearest Orchard Brand sales office.

GENERAL CHEMICAL COMPANY

Executive Offices: 40 Rector Street, New York City

Sales Offices: Atlanta • Baltimore • Buffalo • Charlotte • Chicago • Cleveland • Denver • Houston
Kansas City • Los Angeles • Minneapolis • Montezuma (Ga.) • Philadelphia • Pittsburgh
Providence • San Francisco • St. Louis • Wenatchee • Yakima
In Canada: The Nichols Chemical Company, Ltd. • Montreal • Toronto.

Clermont, a handsome new strawberry variety. Berries are large, hold up well in size throughout the season, and are of good quality.

NEW AND PROFITABLE VARIETIES OF SMALL FRUITS

(Continued from page 7)

Maryland, the value of adequate spacing has again been demonstrated. The more plants a variety produces, the greater the returns from spacing. Growers of the newer, very vigorous varieties that are now being brought out cannot afford not to space them.

Catskill is assuming first rank as a midseason variety. The unusually large, bright red berries and the great productiveness of the plants are the outstanding features of this variety. It is of good table quality and fair shipping quality. It is adapted to the latitude of Maryland and northward.

Clermont, a very handsome variety, is giving a good account of itself in New York. The berries are large, hold up very well in size throughout the season, resist bruising somewhat better than Premier, and are of good quality. Clermont has demonstrated considerable drought resistance. In seasons and on sites conducive to the development of leafspot, some trouble may be experienced with this disease. A site with good air circulation is desirable for Clermont, and it is probably best adapted to the northern tier of states.

Culver is perhaps the best variety for preserving in the northern states. Large, handsome, medium to dark red, very attractive but inclined to bruise, and not suitable for shipping, Culver is nevertheless a promising new sort and deserving of trial. The berries are red to the center, somewhat acid, and of excellent flavor. The foliage is dark green, tall, healthy, and the plants are hardier than the average.

Several new raspberries are now attracting attention. Newburgh, which has been well tested in New York State, is notable for its large size, unusual firmness, the productiveness of the plants and their ability to escape mosaic. For commercial planting its ability to stand up in shipping and on the market is a big asset. The plants are of only medium height, and the berries tend to pick hard, especially in dry seasons and when the canes are not cut back at the dormant pruning. Possible remedies for hard picking include cutting back the canes about one-third at spring pruning, nitrating rather freely in the spring and not picking the berries until they are fully ripe. Because of their firmness this delay in picking is less serious than with a soft variety.

Taylor and Marcy, two very recent new red varieties are definitely superior to Newburgh in stature and ease of picking. Marcy is the largest of all red raspberries, but Taylor is sufficiently large for a good market berry. Both are long conic, Taylor is bright red, but Marcy darker and with a bright gloss. Both are superior

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IMPROVING A BLUEBERRY LOT

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grown with gray birch, witch-hazel and large blueberry bushes. About six years ago the birches were cut for firewood and all the brush cleared away and burned, leaving only the clumps of blueberry bushes. This work was done in the late fall and some pruning was done to the large clumps of blueberry bushes. These bushes were 10 feet tall and had produced but few berries for a number of years. The next year further clearing was done and all unthrifty growth removed. Old bushes which must compete with surrounding growth are usually reduced to two or three large shrubs.

After clearing the lot, new growth came up around the old growth and this young cane stock was encouraged. That year, the old bushes put out new shoots and fruit buds, so the following season all of them bore good crops of berries. When a blueberry lot is cleaned out, we cannot expect fruit until the second year, as one intervening season is necessary to make the fruit-bearing wood.

Of approximately 100 clumps of bushes cleared around, one-quarter bore berries of good size and color. About the same number bore berries too small to be of commercial value. Half of the bushes bore berries of medium size, but the color ranged from sky blue to deep black. The problem, then, was how to work over the lot into desirable kinds. As stated, all new growth was encouraged to grow, and last season for the first time some of this new wood produced berries. Meanwhile, offsets of roots of the best bushes were taken up and re-set near the bushes having the small berries. This work was done carefully in the late fall and seems to have been about 80 per cent successful. The plan is to remove the bushes of low commercial value when the better ones come into bearing.

It has been found that young growth bears berries of approximately the same size and color as the old bushes. Propagation of new bushes is somewhat difficult. Commercial growers who are building up stocks of improved varieties have the aid of a greenhouse to root the cuttings. Hardwood cuttings can be rooted with the aid of cold frames, but the process is rather difficult for the average farmer. However, the possibility of dividing clumps of desirable kinds offers possibilities.

In the case of the clearing under discussion, it is planned to foster the development of young growth and remove the tall stock when this comes into profitable production. It

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GRAPE POLLINATION

(Continued from page 9)

Lack of pollination and subsequent fertilization of the blossoms of our cultivated fruits is not always due to poor pollen and other physiological defects. Self-fruitful varieties often fail to set satisfactory crops. Poor yields result from many environmental factors. Before discussing these factors, let us briefly review what actually takes place so that you may later have an apple or a bunch of grapes to eat.

Each individual flower of the so-called "perfect" grape variety has two sets of organs or parts, normally the pistil and the stamens, which are designated the essential organs. The pistil in the grape flower is shaped somewhat like a vase with a rather long tapering neck which is expanded or spread out at the top. Of course this is small, varying from a quarter to a half inch in length. The egg-shaped base of the pistil is termed the ovary, the expanded top the stigma, while the tube that connects the two is called the style. The ovary contains small bodies which, before they are fertilized with the germ from the pollen grain, are known as ovules and contain the egg or female element. Once these ovules are fertilized they normally develop into seed.

The stamens, the other group of essential organs of the grape flower, are five in number. These are grouped about the pistil in a rather regular ring. The stamen consists of two parts, the stalk or filament and the anther. The anther is composed of two sacks in which are developed the grains of pollen containing the male element.

Usually the development of the ovules contained in the ovary and that of the pollen grains in the anther are closely correlated. A further correlation also exists between the stigma and the ripening and release of the pollen grains from the anther sacks in which they are developed. The stigma, the expanded upper part of the pistil, becomes covered with sugary, thickened secretion at about the time the pollen grains are forcibly ejected from the anthers. Some pollen grains fall on or are blown to the sticky surface of the stigma. Under normal conditions the pollen grains, taking nutriment from the sugary secretion on the stigma, develop hollow tubes which penetrate the stalk or style of the ovary, and finally reach the ovules. When this stage is reached, nuclei or germ cells pass from the pollen tubes and fuse with the egg cells of the ovules. After this fusion, known as fertilization, has occurred the ovary does not drop, but ex-

pands rapidly in size and looks like a miniature grape.

Sometimes, when fertilization is not perfect, the ovary increases in size for a few days and finally drops from the cluster. Again, the blossoms may wither almost immediately, indicating that no fertilization has occurred. Most cultivated grape varieties possess both essential organs in the same flower. However, some wild species consist almost entirely of either male (staminate) or female (pistillate) individuals. Occasionally a male vine gets mixed in a commercial planting of grapes or in the home garden, and the owner may wonder why no grapes are borne. Of course there cannot be fruit on a vine lacking pistils. If, however, a female vine were mixed with varieties that produce potent pollen and other factors were favorable, fully matured fruit would result. A similar process takes place in the apple and other fruit trees.

Every fruit grower is well aware of the fact that the weather is the most important factor with which he has to contend. He sees his trees and vines come into leaf, blossom full with every promise of bountiful crops, only to discover later that the yields will not approach a profitable return, no matter how favorable the growing conditions as to sunshine, heat, soil and water supply may have been or how carefully he may have selected the varieties from the standpoint of pollination and fertilization. It is a debatable question as to whether cold or excessive rain at blooming time is most detrimental to pollination and fertilization. Some fruits are known to withstand lower temperatures during and directly after blossoming than others. But in general low temperatures and frosty nights prevent growth of the pollen tubes without which, as we have already learned, there can be no fertilization.

If the daily range of temperatures is wide, most fruits set their blossoms poorly. Prolonged drought affects the vigor and fruitfulness. Cold weather and rains prevent the flight of bees which is all-important in the fertilization of tree fruits. Dry winds shorten the receptive period of the stigma, a most important consideration. Excessive and continued rains disintegrate the pollen grains through actually rendering them spongy and hence incapable of developing pollen tubes. Nutrition of the individual tree or vine affects pro or con the vitality of the plant, and thereby the potency of the pollen. Excessive bloom cannot be supplied with sufficient plant food to set all blossoms, and here evidently nature exercises a check whereby approximately the number of fruits

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IMPROVING A BLUEBERRY LOT

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was found, also, that new stands of bushes have appeared at various places where no large bushes were in evidence. These are being encouraged in the hope that they will prove desirable varieties.

A few cases of budding the new shoots have been successful. This work is done in late summer. Where this is attempted, a new shoot is selected and budded just above the ground. Other shoots are left to shade the budded cane the first year and cut away if the union proves successful. In this connection, there are possibilities that a wild growth of berries might be changed by budding it into a plantation of a fine variety.

Improvement of the blueberry lot offers many fascinating possibilities. Clearing out the brush and systematic pruning will accomplish wonders. Working over the old bushes into better kinds is a job which may well be undertaken by those interested. A good time to prune blueberry bushes is just after the crop has been removed in late summer or early fall. It is possible at this time to tell what wood will bear next year, and by cutting out the surplus at this time, the fruit buds will receive new strength.

INSECT POLLINATION

(Continued from page 8)

Counts were made of the ripe berries set on the branches covered with the cheesecloth and on comparable branches exposed to the bees. Results were as follows:

Varieties	Number of fruits set with bees	without bees
Harding	42	0
Pioneer	16	0
Grover	36	0
Pioneer	32	3

From these results it is evident that honeybees can be relied upon to accomplish pollination, for it is an easy matter to increase the abundance of honeybees by renting colonies or by buying package bees. This is important where wild bees are lacking in abundance.

Paducah, Ky., strawberry growers have set the price of strawberry plants they have for sale to members of the McCracken County Growers' Association at $3.50 per thousand. This association is made up of 4000 strawberry growers.

WOOD POOR

(Continued from page 14)

effective to illustrate such costs in the driving of a car. It will be found that the greater efficiency is secured while the car is driven at a moderate rate of speed. To be sure, there are times when a step-up in the speed is desirable and perhaps justifiable, but the fact remains that the cost of the increased speeds mounts up at a geometric rate.

The grower may do well to bear this in mind when he is operating spray outfits and seeking to get clean fruits with more than moderate pressure rates. When growers are obliged to maintain pressure exceeding 300 to 400 pounds and then have difficulty in securing fruit free from blemishes, their chances for profits are not so very favorable.

In many cases the reduction of the tree's surface and size would be a profitable solution. In European countries where the costs have become very prohibitive, such extreme systems as the "Espalier" have yielded the higher returns. Semi-dwarf trees in parts of Great Britain and the more heavily pruned trees in Japan have proved to be the safer bet for returns. No growth is permitted unless it shows definite promise of yielding returns.

In anticipation of what appeared at that time to be in the offing, various pruning experiments were started under the direction of the writer six years ago dealing with heavier wood removals. Observations were made during this period on the dangers of wood decays, sun-scalding and overcrowded new growth.

It was found that large trees could be completely revamped by some of these drastic wood removals. Cuts as large as 10 to 12 inches across made in March, 1933, are now just about healed over with no injury from wood decays. (See Plates 1 and 2.) In no case did severe exposure to the sun cause any injury to the wood in the tree when large limbs were removed from strong, healthy trees. This sun-scalding seemed more prevalent only in those trees with weakened, diseased root systems. It was concluded that any kind of pruning was too mild for such weakened trees and that it was far more practical to remove them entirely. The vigorous new growth that developed in the healthy heavily pruned trees provided enough shade over the hotter periods of the season to make the dangers of sun-scalding negligible.

It was found that undesirable new growth could be easily rubbed off while it was young and brittle. The younger, more vigorous growth that was selected for fruit-bearing wood produced apples of superior grade. The yield was somewhat reduced but a better average production was main-

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SUPPLEMENTAL IRRIGATION

(Continued from page 11)

They questioned the farmer. His answer was: "I have a small engine and pump with which I am pumping water out of a stream onto the berry patch. I don't have as much water as I would like to put on but what I am putting on certainly has increased the size and number of berries I am getting from the patch."

In checking the amount of water that was applied by estimating the size of pump and time of operation, we found that approximately two inches of water was applied to the three-quarter acre patch. As a result of the water, final records showed that this patch produced 186 crates of No. 1 berries. Not an exceptionally high yield, but extra good as compared with the average yield of 41 crates per acre for that area. With the average price of $3.25 per crate for the season, this grower was extremely well paid for the use of the water.

One strawberry grower near Marion, Ohio, in which the writer is interested, installed an irrigation system for strawberries, raspberries and truck crops four seasons ago. This system has been used three seasons of the four. Local rains were sufficient that it was not necessary to use it the season of 1935. It was, however, all ready to apply water in case of a few days of dry weather. This system used the porous canvas hose for the strawberries and raspberries, laying the hose directly over the row in order to apply the water close to the roots of the plants. The grower states, "I have found that light applications of water every two or three days during the fruiting season are more beneficial than waiting longer periods and applying more water." The light applications were estimated at about one-half inch of water per acre. This last season this grower had strawberries for about three weeks after non-irrigated patches had stopped bearing.

Two growers in the northern part of Indiana have been using irrigation on strawberries and raspberries for several years. They state that there has not been a season when they have not used their system, and the drier the season, the greater the profit.

The applications of water are of value not only to the fruiting crop but as an insurance measure for next year's crop. As we traveled through the strawberry area of Indiana last fall, the berry patches looked discouraging. Occasionally a patch that was located on low land or fed by seepage water had a good growth of plants. The majority, however, had been badly burned due to the fact that a lack of water had not permitted the newly set patches to develop.

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WOOD POOR

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tained with fruit of a higher grade. The reduction in the costs of managing these revamped trees together with the enhancement of the grade of fruit along with better average production allows for a higher rate of profit per tree.

All pruning must be regarded as a very serious surgical operation. If proper precautions are exercised, very large cuts can be made and healing over allowed to develop with no injury from wood decays. Cuts should be made so no portions will be left to interfere with healing over. Great care must be used in heading a larger limb back to a smaller one. Such wounds generally heal more slowly than those near the main body. In such cases care should be exercised so that the angle of the cut is not too abrupt, otherwise the lower area of the cut will project too high above the healing tissue. All growth above these cuts should also be headed back so that the weight will not cause a splitting down the length of the grain in the wood. It is very important that all wounds be kept painted until fully bridged over with new tissue. Good results have been secured in these experiments with common red barn paint.

Excess new growth that is forced as a result of the heavier pruning can be rubbed off while it is still young and brittle by the less expensive hired help. More skillful attention will have to be given the selection of fruit-bearing wood from the newer growth. Essentially the same principles that are employed for the usual thinning out of wood will apply. All brushy tendencies should be carefully eliminated, so that the fruit-bearing wood will be conveniently and uniformly distributed over the tree.

In the hauling out and disposal of the prunings it will be well to provide for clearings conveniently near. The less productive parts of the orchard will obviously serve best for such purposes. In sections where black root rot is present those areas affected may be benefited by the burning of the prunings in them. Even in large plantings of solid blocks of healthy trees it will pay to remove enough trees to maintain clearings to which pruned brush and wood may be hauled and disposed of. Such clearings can serve at least a dual purpose. After the brush is burned up, the clearings may be liberally fertilized to grow some crop like millet, later to be mowed down and hauled into the orchard to improve its organic content.

Specialized efforts on those units that can be managed with the greater degree of efficiency offer the average apple growers of our country the better opportunities for seeing their way

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Camera!

H. W. Skinner, right, Chambersburg, Pa., fruit grower and prominent member of State Horticultural Association of Pennsylvania, which held its annual meeting in Harrisburg during the State Farm Show, congratulates Dr. W. B. Mack on his recent appointment as head of Department of Horticulture at Pennsylvania State College, while another well-known Keystone State grower, C. J. Tyson, of Gardner, awaits his turn to extend felicitations.

Pennsylvania grower John Runk of Huntingdon (left) is busy explaining a peculiar situation of fruit growing in western Pennsylvania and has as his interested listeners (left to right) Dr. Firman E. Bear of New York, Fruit Grower McNitt of Milroy, Pa., and J. L. Mecartney of Pennsylvania State College horticultural extension staff.

Paul Thayer, left, fruit grower and a director of the Pennsylvania State Farm Show, congratulates Johnson Gillan of St. Thomas, Pa. (second from left), 1937 president of association, along with Oliver Heacock of Biglersville (second from right), and H. F. Hershey of Hamburg, 1936 president of the association.

STATE NEWS

(Continued from page 20)

mers from liability for sales tax on their produce.

Necessity of varietal improvement was urged in a talk by F. M. Coe, associate horticulturist of the experiment station, if deciduous fruit growers are to retain their share of the fruit business.

Nello Christofferson, Brigham City, was elected president of the society for 1937; vice-presidents: Dr. A. L. Stark and Dr. A. L. Wilson, State Agricultural College, Logan; John Blazzard, district agricultural inspector, Brigham; and C. D. Ashton, assistant county agent, Provo; directors John Burningham, Bountiful; Earl Lemon, Willard; Dr. N. C. Spaulding, Provo; R. W. McMullin, Payson; H. B. Woodbury, Salt Lake; John Hall, North Ogden.—F. M. COE, Sec'y, Logan.

PENNSYLVANIA — Informal announcement was made at the annual meeting of the hort association at Harrisburg, January 20-21, during State Farm Show, of the resignation of Dr. R. H. Sudds as secretary of the association and as a member of the staff of the Department of Horticulture, Pennsylvania State College.

Dr. Sudds took over his new position with the Department of Horticulture, University of West Virginia, Morgantown, on March 1. He will have the Kearneysville work in fruit growing formerly conducted by Dr. L. P. Batjer and in addition new fields of research at Morgantown.

J. U. Ruef, Pennsylvania State College extension pomologist, well known among fruit growers of the State, has replaced Sudds as secretary of the association.

Other officers for 1937: President, R. Johnston Gillan, St. Thomas; vice-president, John A. Runk, Huntington; treasurer, C. B. Snyder, Ephrata.

OKLAHOMA—Brightest prospect in several years for commercial fruit growers in Oklahoma presents itself as a result of last summer's drought and approach of the end of the dry cycle.

Beneficial influences of the recent drought from the grower's standpoint: Almost complete extermination of codling moth and killing of trees situated on unsuitable soil.

It probably will be four or five years before the codling moth will have had time to propagate so as again to be a menace to fruit crops. Harboring places for innumerable insects have been destroyed in the fruit sections by cutting down decayed trees.

Most losses have been among older trees and those too closely planted. As a result of his experience with the drought, the commercial fruit grower will profit by selecting the hardiest varieties and his best soil in replanting his acreages.

Chief consideration in replanting is to get trees in the ground as soon as possible, preferably before April, as percentage of survival will be greater than among those planted later. Holes should be dug deep and wide enough to prevent bending and cramping of roots. Dry soil should be watered. Tops of trees should be pruned before transplanting, and the trees should be set two inches deeper than they grew in the nursery.—F. B. CROSS, Sec'y, Stillwater.

WASHINGTON—Feeling a definite need for acquainting brokers, jobbers and retailers with the magnitude of the Pacific Northwest apple industry, and thereby strengthen the position of King Apple among American fruits, Pacific Northwest Fruits, Inc., has produced a three-reel motion-sound production which will be shown before these groups.

The film covers every phase of the apple industry in the Wenatchee, Okanogan, Kakima and Hood River (Ore.) section, from pruning of the trees to display of the fruit in the retail store. It is entitled. "Doc Apple's Family Goes to Town," and emphasizes the four brands represented by the Doc Apple trademark—Skookum, Big Y, Wenoka, and Diamond.

The picture was produced under the supervision of J. E. Klahre, manager of Pacific Northwest Fruits, assisted by the Izzard Company, advertising agency. Motion picture men claim it is one of the most complete and workmanlike half-hour commercial movies ever produced.

Other films for showing in schools and local theatres and for special work among women's clubs and home economics groups are in preparation.

INDIANA—Merle Troth, Orleans, operator of one of the largest apple orchards in the Midwest, was elected president of the Indiana Hort Society at the recent annual meeting. Victor Judson, Bristol, was elected vice-president, while E. V. Hawkins, Mitchell, was re-elected as a member of the board of directors; B. L. Billingsley, Greenwood, re-elected as a member of the legislative committee; and William Walton, LaPorte, re-appointed as a member of the advisory board of Purdue Agricultural Experiment Station.

Prospects for a good fruit year look especially good for apples over the entire State. Reliable indicators are a heavy bud set in orchards which have received good care and have not been subjected to extremely adverse conditions.—EVERETT WRIGHT, Sec'y, Lafayette.

WOOD POOR

(Continued from page 29)

clear for a profit. In operating the more manageable unit he will be less liable to rely merely on chance. He will be more able to figure his costs and less liable to go into wasteful expenditures. He will feel justified in increasing the output of his unit only when the added effort assures a gain. The apple orchardist and the allied interests will find that on the average it will be far more wholesome to the apple industry if apple trees are reduced to a size that will eliminate the prevailing "Wood Poor" condition.

With the chances for foreign export becoming slimmer except for occasional spurts the best bet is in our domestic markets. In a limited way some of our apple interests may continue to get justifiable returns from export markets and with long car load haulings. The shift to roadside markets and smaller truck haulings has become increasingly significant and is looked to with some promise. If such a shift is the main hope for our apple growers, it will be increasingly important that they reduce the size of their trees to more manageable units.

A general movement in bringing apple trees down to a size allowing for more efficient management together with a concerted plan for advertising the excellent merits of the fruit should contribute materially to the improvement of the apple producing industry.

WEATHER MEN

(Continued from page 13)

ioon was halted for thermometer readings.

Without attempting an involved technical explanation, it is sufficient to say that the thermometer, fitted with a small dry battery, is so calibrated that by multiplying the time in seconds between flashes of a red and a white light, easily discernible from the ground, by two, the temperature is automatically determined. Thus by taking the readings at all desired elevations, the temperature's rising curve may be plotted, the "ceiling" to which it is necessary to warm the air determined, and the number of pots or wind machines necessary to warm a given area calculated.

But the story goes further. In addition to saving citrus from freezing, the air mass analysis system of forecasting, coupled with aerial-thermometer readings, enables orchardists to plan pest control operations so as to avoid forthcoming mist, rains and fog. By forecasting temperatures several days in advance, best results from spraying will be obtained. When you think southern California's citrus crop tops the $112,000,000 annual production mark, any savings by these inexpensive methods is apt to be considerable, both in man-hours and fuel, and in the crop itself.

SUPPLEMENTAL IRRIGATION

(Continued from page 28)

One of the best patches observed was in Owen County, Indiana. It was only the application of water to the set plants and later in the growing season that permitted the plants to develop runners and a thick-set patch. This grower did not have a patch the past season, but he has prospects of a good yield for 1937 with the protection afforded by the application of water if the natural rainfall is not sufficient to produce a crop naturally.

The problem of water supply and method of application are very difficult in some areas. Natural streams run dry right at the season the water is most needed. Deep wells are out of the question in certain areas because of high pumping costs and in some cases the water is not suitable because of its chemical content. Storage of surface water in ponds will in many cases solve the water supply problem.

The quantity of water to be stored as affected by the size of the pond will depend upon the acreage to be irrigated. The size of the pond will somewhat be affected by lay of the land. Often natural draws can be dammed, making a storage reservoir. Each particular location should be studied so as to construct a dam with an ample safety factor and provisions made to carry the excess water over, around or through the dam without destroying the dam.

After the water supply is provided, a pumping plant is usually necessary to force the water to the field. The size and capacity of the pump will vary with the acreage. One inch of water over an acre equals 27,154 gallons. This figure should be used when figuring the size of storage pond or well necessary to supply the water. Cylinder pumps are used for small installations and where the water is free from silt. Centrifugal pumps are used where it is necessary to handle from 100 to 800 gallons of water per minute. Gasoline engines, tractors and electricity, provide power for the pumps.

The profits expected from irrigation depend upon the crop grown and the season during which it is grown. An irrigation system may pay for itself in one season and another season be of little value, although over a period of years it will prove to be a good investment to the grower of valuable crops of limited growing seasons. Let's think of it as an insurance practice.

Heavy January frosts in California citrus districts damaged fruit to the extent of 15 to 25 per cent, according to information released by officials of the California Fruit Growers Exchange.

NEW AND PROFITABLE SMALL FRUITS

(Continued from page 22)

to Latham and Newburgh in appearance and quality and are firm enough for shipping. The lighter color of Taylor gives it the advantage on the market. Unless serious faults develop that are not yet apparent in these varieties, the writer is venturing the prediction that they will eventually become important commercial varieties and possibly replace Newburgh and Latham.

Sodus, a new purple raspberry, is much superior to Columbian and somewhat larger and of better quality than Potomac. Both should replace Columbian, all stock of which is considered by plant pathologists to be infected with mosaic.

Bristol and Naples are new black raspberries, which ripen about a week apart and cover the season nicely. Naples is a few days later than Cumberland and more resistant to anthracnose. The berries are firm, of good size and quality. Bristol is very large, firm, and of highest quality. The plants are very productive. Dundee, ripening midway between the two, is likewise large, handsome and of fine quality. Evans, ripening with Bristol, is, in the opinion of some growers, a very worthy new variety of high quality and fine appearance, although softer than Bristol.

The introduction of the Red Lake currant by the Minnesota station is a real landmark in currant history, since the last good variety to be brought out was Diploma in 1906. Red Lake is about as good as Perfection in fruit characters and much superior in plant characters. It is a very worth while new variety and should be tried by all growers of currants.

• Frederick V. Coville •

Noted U. S. D. A. botanist, Dr. Frederick V. Coville, died at his Washington, D. C., home in January. He was 69 years of age. Dr. Coville's most outstanding work was the taming of wild blueberries in the bogs of central New Jersey. He not only succeeded in cultivating the blueberry, but increased the size and improved the quality in the varieties he introduced.

While proving satisfactory for use on older fruit trees having thick bark, coal-tar bands have been found to be injurious to young trees, according to the Pennsylvania Department of Forests and Waters. Bark of the young trees is easily penetrated by the coal-tar chemicals. The department recommends the use of a sticky, non-injurious substance to trap crawling insects. Department workers state that fly paper makes a good, safe band when tacked around the tree.

GRAPE POLLINATION

(Continued from page 25)

capable of proper maturity are retained, the excess dropping to the ground as soon as the stimulating effects of the pollen germs have disappeared. Since this dropping, in the case of unfertilized apple blossoms, occurs in June in many northern latitudes, it is designated as the "June Drop."

Now let us consider the pollination and fertilization problem as it pertains to the grape and briefly discuss some of the things that can be done about it. Practically all of our cultivated American grapes possess both essential organs in the same blossom, namely pistil and stamens. Beach learned from his researches that the stamens in some varieties assume a different position with reference to the pistil. In some sorts the stalks or filaments of the stamens are but slightly inclined from a vertical position, while in other varieties the stamens are recurved, so that the anthers at the top of the stamens are bent away from the stigma of the pistil. He found that there was a definite correlation between recurved stamens and self-sterility. This relationship is so clearly defined that plant breeders are most reluctant to introduce a new grape if it possesses recurved stamens, no matter how desirable it may be in other characters.

Some varieties, however, having upright stamens are self-sterile. Such varieties cannot fertilize their own blossoms, and they have but little, if any, value in fertilizing other sorts. Concord and Niagara are good examples of self-fruitful varieties.

In addition to a receptive stigma, viable pollen, and conditions favorable for pollen dispersal, there must exist an affinity between the pollen and the pistil and their germ cells. When two varieties cross-fertilize readily, they are said to be compatible. Incompatible varieties will not cross-fertilize. Lack of compatibility may be because the pollen tube grows too slowly as it makes its way through the style of the pistil, or the tube may not reach a sufficient length to reach the cavity of the ovary in which are the embryo seed or ovules which are to be fertilized. Many other factors also may be involved.

Many varieties of fruits of the highest quality are imperfectly-fertile—they must be cross-fertilized with pollen of other varieties that is not only viable but also compatible. There are several self-sterile varieties of grapes prized alike by the home gardener and the consumer. Some imperfectly-fertile varieties are highly considered in the manufacture of grape products.

[*To be continued in April*]

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MORE ABOUT HARDY ENGLISH WALNUTS

DURING the past year many inquiries concerning the hardy English walnuts from Poland have been received by the writer. Additional information concerning them has been made public and the fact that more seeds and plants are being imported this winter makes advisable some statement concerning their present status.

At the 1936 meeting of the Northern Nut Growers' Association, Rev. Paul C. Crath of Toronto, Ontario, who first brought these hardy Polish nuts to Canada and the United States, and has since made several importations of nuts and scions, discussed his work with them in detail. Comparing the climate of Ontario with that of Poland he was surprised to note the similarity. He noted also that flint corn, apples and black locust were thriving in Ontario, and from his experience in Poland he knew that where these plants would grow and ripen, English walnuts would do the same.

In his native land, eastern Ukraine, 100 miles east of Kiev, walnuts were in many orchards, growing to large size and bearing abundant crops, even though the winters were severe. This led to the first importation of nuts in 1923. Between 1924 and 1929 he imported and distributed nearly 1000 walnut trees in Ontario and the northeastern states. One which he planted in Toronto began bearing in its seventh year. In his paper he cited several instances of these Polish nut trees enduring severe winters.

S. H. Graham, Ithaca, N.Y., reports that 100 one-year-old seedling trees raised from seeds received from the Rev. Crath endured the record-breaking winter of 1933-34 with very little injury even though growing in an exposed location with only an inch or two of snow on the ground. Mr. Graham also states that the trees grow rapidly after the tap root becomes established, that the quality of kernel from the better trees is very good with the proportion of kernel averaging around 50 per cent.

As a result of the Rev. Crath's paper, Carl Weschke, St. Paul, Minn., decided to send him to Poland to collect nuts and scions from an even colder region of Poland some distance to the north of the region of the previous collections.

Seedling trees are now available from one source in the United States and several hundred pounds of walnuts from superior trees in Poland will also be available this spring for seed purposes.

Practically all of the plants available yet are seedlings and will of course vary considerably in tree and nut characters. Some will be better than others but until they have fruited their merits cannot be determined. Certainly their superior hardiness entitles them to considerable attention, and it is to be hoped that they will be extensively tested in the colder portions of the United States and Canada.

It is only by such testing that superior varieties worthy of propagation for possible commercial plantings or home use may be discovered. Testing these nuts is a gamble, but in this case at least no one can lose much since every tree at least is a handsome specimen and should bear fairly respectable nuts, even though not good enough to name and introduce.—G. L. SLATE, Sec'y Northern Nut Growers' Assn., Geneva, N.Y.

Because of the short apple crop last year in the New England states, many McIntosh apples were imported from British Columbia. This is the first time in eight years that apples were imported from British Columbia.

NEW

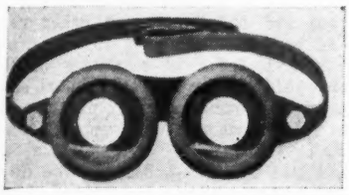
- Non Fog Goggles
- "All-In-One" Stamp
- Handy Radiator Cleaner

By HANDY ANDY

The really smart fellow is always learning something from other folks. Which reminds me that I once asked a mighty successful grower what he considered his greatest assets. He said: "Well, I've got $200,000 eyes and a $100,000 sense of hearing. I'm always looking for something new and worth while, and I'm always willing to hear of better ways of doing things." No wonder he got ahead! So let's try to aid each other with "helps" from this department. I'll tell about the things I've seen and heard each month. And if you see or hear something you think worth while, I wish you'd drop me a line about it and a clipping or picture if you can. In return, ask me for any information you want. Just address Handy Andy, American Fruit Grower, 1370 Ontario Street, Cleveland, Ohio. Here are some things I've just heard about this month:

NON FOG GOGGLES ●

"Boy, but my eyes smart from that spray!" How many times have you said this? The trouble in the past has been that goggles or glasses get covered with the spray and the first thing



you know you're turning the gun or broom right at the fellow driving the tractor. A new, gas-tight goggle has recently been perfected with an arrangement whereby water enclosed in a chamber keeps the glass from fogging. Natural movements of the body release the water which washes the glass clear of moisture. The goggles are made so the strap can be adjusted to fit the wearer.

We usually think of corkboard as insulation for the storage, but it has proved valuable as another kind of insulation. When new graders or other units of equipment are placed in the packing house or storage, place a sheet of half-inch or inch corkboard under the legs before they are bolted down. The cork will act as insulation by absorbing the rumble and shock of the running motor and will help keep the screws and nuts tight on the grader by reducing the jarring.

"ALL-IN-ONE" STAMP ●

Fruit growers must soon begin thinking of marking fruit containers. Laws in several states require certain information printed on each package. An improved type of rubber stamp, just introduced, is pictured below. The full-hand grip makes it easier to use when marking many packages. This stamp has interchangeable logo-

types for the size, grade, and brand. It allows for all of the marking to be done in one operation. A sample impression is also shown. The logotypes in the stamp may be changed to meet the laws of each state. The handle of the stamp is of aluminum, making for a lighter-weight unit.

HANDY RADIATOR CLEANER ●

Trucks and motor cars that have gone through the winter with antifreeze in the radiators will give better performance while being used on warm spring days if the radiators are completely cleaned out. And while the job is being done on trucks and cars, it might help to give the radiators of sprayers and tractors a good cleaning out. Nothing is so exasperating as to have a tractor or sprayer radiator boil when you are trying to cover the orchard in a hurry for apple scab or some other spray. Probably the easiest and best way to clean out the accumulation of sludge in a radiator is to pour in a manufactured compound, such as Sani-Flush, run the motor, rinse once with clean water, and then fill. Such a radiator checkup is inexpensive and will certainly save time and bother later in the season.

Widespread tree injury is becoming apparent as a result of the severe temperatures of last winter, and repairs are now being made. Large wounds should be treated with some elastic, antiseptic wound dressing that will protect the exposed tissues as well as prevent the entrance of disease and insect pests. Such a dressing is also needed for bridge, whip and cleft grafting. Among the grafting compounds available are New Method Tre-Seal, SaVa Tree, Cavity Seal, Hunt's Wax, Static Grafting Compound, Daveyite, Daveykote, Bartlett Wound Dressing and Trowbridge's Grafting Wax.

SUCCESSFUL ORCHARDS

● A "ROUND TABLE" PAGE FOR EVERY GROWER ●

HEATING SAVES STRAWBERRY CROP

HOOSIER Byron L. Troyer writes concerning a Michigan grower:

"A southern Michigan truck and fruit grower took a page last spring from the methods of Florida and California citrus fruit men and made more than $50 from two acres of strawberries.

"On May 13, a heavy frost hit his part of the State and most of his neighbors reported that as many as half of their strawberry blossoms were destroyed.

"This grower resorted to smudging and saved every blossom in his patch. Using old oil drums as smudge pots, he inverted these and placed waste crankcase oil in the top of the barrels. Cobs and sticks of wood soaked with kerosene were placed in the oil to keep the fire going all night and form a large smoke cloud which kept frost away from the patch.

"The smudge pots were spaced 50 feet in each direction.

"Glen Vite is the northerner who used the orange growers' methods. He raises the Premier variety and finds that the berries he saved with the smoke brought far more than those harvested later in the season. Many of his earliest berries sold for $3 a 16-quart crate at the Benton Harbor fruit market.

"He keeps them hoed every day and finds that wheat planted with the berries provides just the right amount of shade to make the best crop."

MORE BLACK RASPBERRY CULTURAL NOTES

"ROUND TABLE" commentator, William F. Yowell of Nebraska says regarding his notes in the December issue: "Because of misprints I'm making the following corrections in my December item. The item stated 1,855 hills per acre and it should have been 1,815. The item also states 18 inches of bearing branch wood per hill which should have been 18 feet."

Mr. Yowell certainly checks up on his figures, and here are some more notes which he has sent in on the culture of black raspberries.

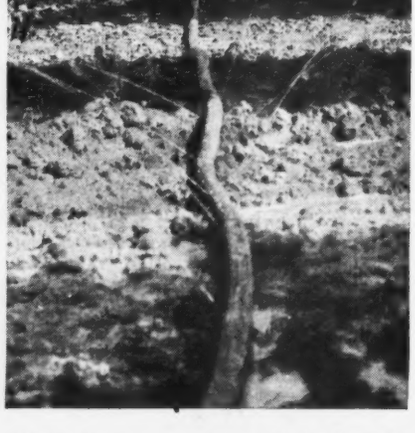
"For five years, 1932 to 1936 inclusive, I have kept an accurate record of operations on my nine plantings of black raspberries and find the following correlations:

"There is a correlation between the opening of the bloom, the ripening of the berry, and weather conditions. It is generally conceded that the black raspberry starts to ripen under normally favorable weather conditions 30 days after the first bloom opens. For four years the berries ripened in 29 and 30 days. The fifth year 39 days elapsed between the opening of the first bloom and the ripening of the berry. Weather conditions during this time were cool, damp, backward, and very unfavorable.

"A correlation exists between the length of trim and the duration of the picking season of from one to seven days depending on the length of trim. The shorter the trim the shorter the picking season.

This page is a place for growers to get together and exchange experiences and ideas. The beginner, as well as the veteran, will find here many practical suggestions for better and more profitable fruit growing. In return for the helps you receive from this page, be ready to pass on, for the benefit of others, any new idea, method or procedure you have developed or run across. Just jot it down as it occurs to you (a postcard will often do) and mail it to the "ROUND TABLE EDITOR," AMERICAN FRUIT GROWER. Don't worry about fancy writing. What the readers of this page want are practical pointers—that are to the point.

"There is a correlation between the rainfall or moisture and the duration of the picking season when the plants are trimmed the same length. In my case there was a variation in the duration of the picking season between favorable and unfavorable moisture conditions of 2.2 days. Favorable moisture conditions prolong the picking season."



Eyelet hose, a popular method of small fruit irrigation. Porous hose is also widely used for this purpose.

TOBACCO SERVES AS STRAWBERRY MULCH

"IN the December AMERICAN FRUIT GROWER, page 10, I note instructions for mulching strawberries. Very good," says Fruit Grower Griffen of New York, "but here's a better way to do it: Use tobacco stems. Sprinkle them over the plants until the plants are nearly invisible. Do not take them off in the spring. The plants will find their way through them in good time and will be cleaner because of them. The stems will also cut down the number of insects and weeds. I bought my first lot of stems, laid down, for $9 a ton. My last loads ran as high as $24, proving the demand for stems as a mulch. I was too far from the tobacco fields for a good price. I've been doing this for 10 years and plan to keep it up."

Those strawberry growers near tobacco fields might try Mr. Griffen's suggestion. Let the "Round Table" editor know how you get along with it.

TREE SHADING CUTS DOWN SUN SCALD

HERBERT J. PLAGGE'S question on the January "Round Table" page about raising raspberries under some kind of shade brought forth the following comment from W. E. Ickes, berry grower of Ohio:

"My father and I have grown the Latham red raspberry and other varieties as well for the past 15 years. We have grown them in a young orchard, which could be considered as part shade, but we have found that our plantings five years old or more produce enough foliage to shade the crop of fruit so that very few berries are sun-scalded. We do not thin the new canes too closely, but leave approximately seven or eight canes in every 18 lineal inches of row. Younger plantings than the age mentioned quite often do not produce a dense enough foliage to protect the berries. The season just past was the worst we have ever seen for sun scald, as many of the berries were unfit for market. This sunscald injury was considerably less in the planting in the young orchard than in the planting out in the open which had no shade.

"We grow our berries on a very heavy clay soil that holds moisture quite some time. We have never irrigated, but checked on the rainfall for the past three years. Apparently our berries were just as nice in a season when our rains were a week or 10 days apart as they were when rain fell every other day. In 1934 we had some rainfall every other day all through the picking season but as the rain fell on the off picking days we did not market any wet berries.

"From our observations I don't believe irrigation on our heavy clay soil would increase the total crop, unless we had a season where practically no rain fell during the entire picking season. If our plantings were on a lighter soil, like a sandy loam, I would prepare to irrigate every year."

SHERWIN-WILLIAMS 1937 CODLING MOTH SPRAYING SCHEDULE

for winter varieties of apples to be washed

Application	Per 100 gallons water
CALYX SPRAY	3 pounds S-W Arsenate of Lead, 1 pint Spred-Rite
FIRST COVER SPRAY (7 days after Calyx Spray)	Same as for Calyx Spray
SECOND COVER SPRAY (15 to 20 days after Calyx Spray)	Same as for Calyx Spray
THIRD COVER SPRAY	3 pounds S-W Arsenate of Lead, ½ gallon Summer Mulsion
FOURTH COVER SPRAY	Same as for Third Cover Spray
SUCCEEDING COVER SPRAYS— (The time to apply additional cover sprays will depend upon the control of first-brood worms by spraying and banding. The time to apply the first spray for second-brood codling moth is approximately 10 weeks after the fall of the bloom.)	3 pounds S-W Arsenate of Lead, 1 pint Spred-Rite *Do not use Summer Mulsion or any other oil emulsion after the fourth cover spray because they will interfere with the removal of both lead and arsenic residues.

For Early Summer Varieties Such as Transparent and Duchess—Not to be Washed.

CALYX SPRAY—2 pounds S-W Arsenate of Lead, 1 pint Spred-Rite.

FIRST, SECOND, THIRD AND FOURTH COVER SPRAYS—½ gallon Summer Mulsion and 1 pint Nicotine Sulfate.

FOLLOW THIS SPRAYING SCHEDULE FOR BETTER CODLING MOTH CONTROL

THE RESULT OF GREATER DEPOSIT WITH S-W ARSENATE OF LEAD

Here is the "how" and "why" of a 1937 Spraying Schedule that assures Better Codling Moth Control because it meets proven requirements. Sherwin-Williams Arsenate of Lead deposits 80 micrograms of arsenic per square inch of apple surface—the minimum deposit for assured control of Codling Moth. Many Arsenates of Lead CANNOT meet this requirement, but S-W Arsenate of Lead does because it contains not less than 98 per cent of actual Arsenate of Lead and, because it does not contain a deflocculator or any other material that would tend to decrease the deposit of arsenic on apples.

80 MICROGRAMS OF ARSENIC Per Square Inch of Apple Surface

Tests have proved conclusively the absolute necessity of using an Arsenate of Lead that will deposit 80 plus micrograms of arsenic per square inch of apple surface if codling moth control is to be assured. S-W Arsenate of Lead more than meets this requirement, for when sprayed on apple trees at standard dilutions, it will deposit MORE than 80 plus micrograms as thousands of apple growers will testify.

Get this High Deposit and Better Codling Moth Control in your own orchard this season—by using Sherwin-Williams 98 per cent Arsenate of Lead—the largest selling Arsenate of Lead in this country.

SPRED-RITE THE NEW LIQUID FISH OIL SOAP

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Write for this FREE Folder on SUMMER MULSION

A high deposit summer oil emulsion that will kill codling moth eggs.

THE SHERWIN-WILLIAMS CO.
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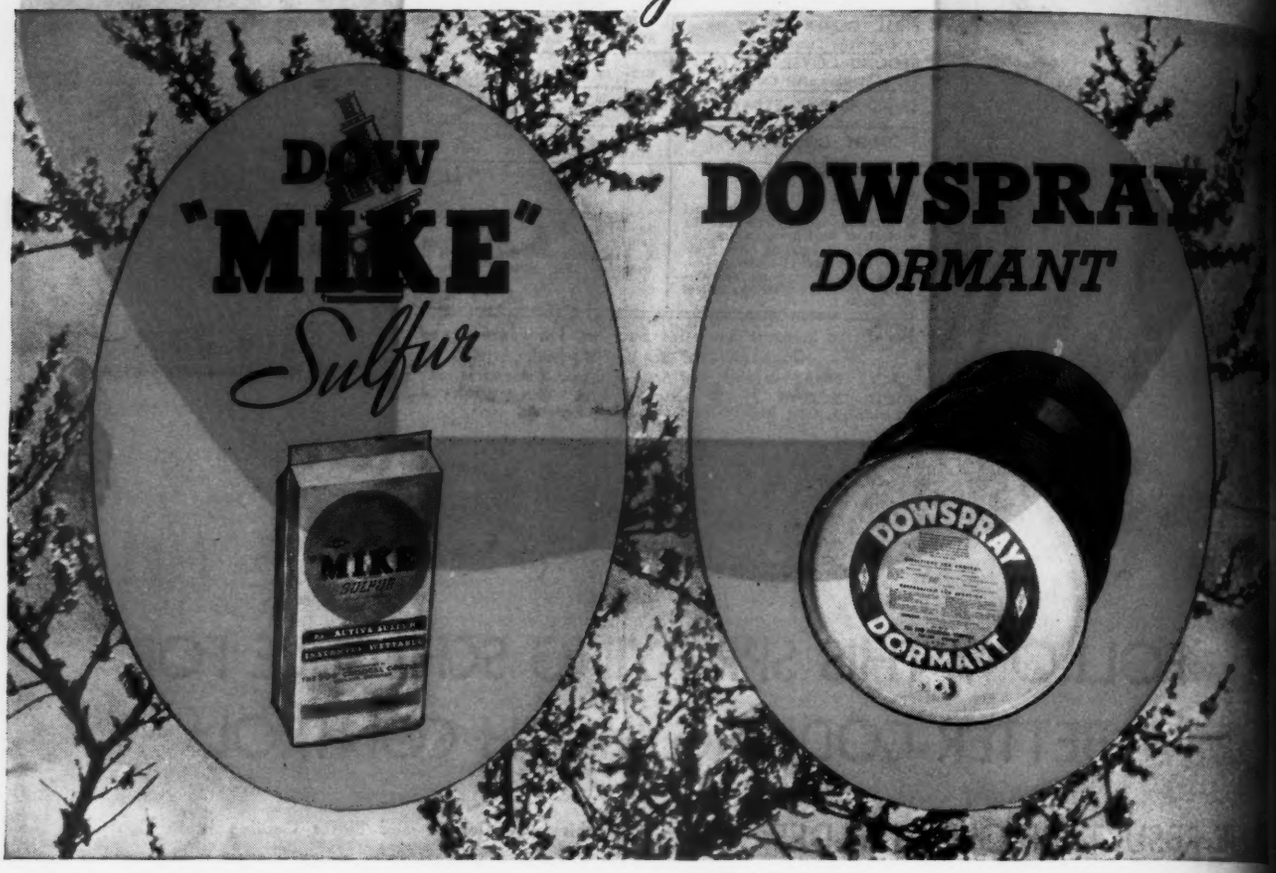
"Everything's under Control"

when you use



WITH DOW "MIKE" SULFUR YOU GET—

AN IMPROVED WETTABLE SULFUR

Dow "MIKE" Sulfur goes into suspension with amazing ease and speed, even without an agitator . . . it stays in suspension longer . . . thereby saving time and labor costs.

MICROSCOPIC FINENESS

15 times finer than previous 325 mesh sulfur . . . Dow "MIKE" Sulfur has a particle size of approximately 1/5000 of an inch. This fineness means better coverage for fruit and foliage—therefore better protection.

IMPROVED ADHESION

Dow "MIKE" Sulfur has sticking qualities far superior to ordinary sulfur . . . it resists rain to an unusual degree yet does not burn foliage, a highly important feature.

HIGHER TOXICITY

More than 95% active sulfur . . . extremely high toxicity that means greater crop protection because it means greater killing power.

GREATER ECONOMY

Dow "MIKE" Sulfur saves money . . . more effective . . . lasts longer . . . does not deteriorate. Your most effective combatant against apple scab and brown rot.

Dow looks upon these two spray materials as its greatest accomplishment in the many years it has been supplying dependable insecticides and fungicides to fruit growers.

Beginning with the original laboratory research covering every angle of toxicity, adhesion, workability and economy on through actual use, and closely studied tests in orchards, these two products have been developed to the highest possible point.

No orchardist can afford to deprive himself of the big gain they guarantee in control of fruit-destroying pests. And no orchardist need be satisfied with less effective spray materials because it actually costs less to put DOWSPRAY DORMANT and DOW "MIKE" SULFUR to work than partially protective sprays.

Decide to use DOW products and keep everything under control!

DOW

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

Branch Sales Offices: 30 Rockefeller Plaza, New York City —Second and Madison Streets, St. Louis—135 South La Salle Street, Chicago

WITH DOWSPRAY DORMANT YOU GET—

NON-FREEZING

Dowspray Dormant contains no water. It can't freeze. You pay freight only on actual spray materials.

NON-IRRITATING

Dowspray Dormant is non-caustic. Harmless to workers and equipment.

LOWER OIL CONTENT

Where certain dormant sprays are used at 5 to 6 gallons in one hundred gallons of water, Dowspray Dormant is used at only 1½ to 2¼ gallons. There's less oil per tree—a big feature.

QUICK AND EASY TO PREPARE

Dowspray Dormant is stable and flows out of the drum without any waste. A special emulsifier supplied with each order makes mixing fast and easy.

HIGH IN EFFECTIVENESS LOW IN COST

Dowspray Dormant gives maximum control of rosy apple aphis, early summer infestations of green apple aphis, San Jose scale, European red mite, and scurfy scale, as well as bud moth on apples and black aphis on sweet cherries. Exhaustive tests indicate that it is effective against more insects than any other dormant spray available.